TEXTILE TECHNOLOGY DIGEST

VOLUME 7 APRIL 1950 NUMBER 4

Abstracts

(An explanation of the classification used in the Digest was published in the January (1949) issue (Vol. 6, No. 1) on the page facing the Index to Authors)

FIBERS A

Natural fibers A 1

COTTON IN THE LINEN SUPPLY INDUSTRY. Frank A. McCord & John A. McCrossan, Jr. Memphis, Tenn., Natl. Cotton Council of Am., 1949. 21 p.

A survey of the use of cotton and other materials in the linen supply industry was conducted in 1949 to determine opportunities for increasing cotton consumption through stronger sales programs and research activities. This summary report of the survey findings was prepared for the use of the cotton industry, research groups, and other individuals or agencies interested in the consumption of cotton in the linen supply trade. —*Foreword.*

Fine structure of wool fiber as revealed by the electron microscope. *Wool Science Rev.*, No. 2, 3-14 (Feb. 1949).

The principles of the electron microscope are noted briefly. The discussion of this instrument as applied to the study of wool structure includes the following topics: types of wool fiber preparation suitable for electron microscopy, electron microscope investigations of the wool fiber, the structure of the cuticle, the structure of the cortex and some applications of the electron microscopy of the wool fiber.

Fine structure of wool keratin as revealed by x-ray and related studies. *Wool Science Rev.*, No. 4, 35-49 (Nov. 1949).

This discussion covers the cross-linkages, the x-ray diagram, the α-fold, the pattern along the keratin chain, feather keratin, and the histological components of the wool fiber. The present paper is part of a series written especially for the layman. See also "Use of x-rays in the investigation of fiber structure", TTD: 7, 326.

Histological study of some varieties of flax. J. Szymanek. *Bull. de l'Institut Textile*, No. 17, 33-46 (Feb. 1950); *in French.*

This study is a continuation of the work on flax conducted by the Institut Textile de France. It describes the results of a histological study of the "Concurrent", "Formosa", and "Rembrandt" varieties, cultivated in the province of the Ile-de-France, picked on flowering and on maturity; it brings out an economic difference between stalks (thick and medium) between times of picking (on flowering and on maturity), as well as the technological differences in quality according to time of picking and to varieties. See also TTD: 7, 1.

Maturation of cotton; its control, its importance. M. O. Roehrich. *Bull. de l'Institut Textile*, No. 17, 9-30 (Feb. 1950); *in French.*

In the light of recent work by Hutchinson, the author defines the cotton fiber as a naturally immature hair. The different methods of judging the degree of maturation are reviewed, and emphasis is placed on the concept of "thickness of wall coupled with width of band", and not considered separately. On the basis of work by Webb and Lord, the responsibility for defects is restricted to dead fibers; sub-maturation, without too many dead fibers is only harmful to combed yarns. The possibility of obtaining high-maturation cotton plant strains is considered.

Mechanism of felting. *Wool Science Rev.*, No. 3, 3-9 (July 1949).

This is a review of the mechanism of felting based on 23 references to the literature.

Artificial fibers A 2

Manufacturing protein textile fibers. A. Ferretti. Australian P. 135 809, Apr. 7, 1942.

A solution of protein is spun in a formaldehyde-

TEXTILE TECHNOLOGY DIGEST is published monthly by the Institute of Textile Technology, Charlottesville, Virginia. In preparing these abstracts, the editorial staff seeks to report correctly the contents of the original papers without reflecting the views of the staff or the members of the Institute. Printed in the U. S. A. Copyright 1950 by the Institute of Textile Technology.

free coagulating bath, the coagulated filaments being treated in saline baths containing urea and salts of mineral or organic acids and finally in urea-free saline baths containing formaldehyde. Mixed protein and cellulosic viscose solution may be used to form a mixed protein and cellulose textile fiber. The coagulated filaments may be passed under tension through the treating baths at temperatures exceeding 25°C.

Production of elastic nylon articles. John R. Lewis, David McCreath & Reginald J. W. Reynolds (to Can. Industries Ltd.). Can. P. 452 974, Nov. 30, 1948.

A process for obtaining elastic nylon articles which comprises heating under substantially anhydrous conditions at a temperature of from 80°C to 150°C the nylon article in essentially undrawn state in the form of a filament, bristle, yarn, and the like in contact with an acidic catalyst, a volatile monohydric alcohol in the form of a vapor, and formaldehyde in the form of a vapor, and continuing the heating until the nylon contains on the basis of its weight at least 4% of combined formaldehyde.

Progress in the manufacture of synthetic fibers during 1949. J. A. Somers. *Brit. Rayon & Silk J. 26,* 59-60 (Jan. 1950).

So far little use has been made of the thermoplasticity and high extensibility of nylon. The high resistance to wear and its high heat insulation properties have been used. Dyeing still presents problems, but many new acetate rayon dyes can be applied. Orlon has also been introduced. Terylene, a British developed and produced polyester fiber is increasing in importance. Vinyon N, an improvement of Vinyon, is somewhat similar to Orlon, and is being marketed in limited quantities. The properties of all of these fibers are discussed and their shortcomings noted. Other synthetic fibers mentioned include Saran, Velon, and Polythene.

Progress in the manufacture of cellulosic and protein rayons during 1949. J. A. Somers. *Brit. Rayon & Silk J. 26,* 51-2 (Feb. 1950).

Emphasis has been placed on the production of a more uniform yarn through the introduction of new types of spinning. Stronger yarns through stretching are being made. Progress was made in the manufacture of cellulose acetate yarn and in the stretching and dyeing of this yarn. New protein fibers include Vicara and an unnamed yarn made of cottonseed. There seems to be plenty of room for other protein fibers. New techniques

for making unshrinkable finishes were developed.

RAYON; THE FIRST MAN MADE FIBER. Jos. Leeming. New York, Chemical Publishing Co., 1950. 203 p. Price: $5.75.

This book on rayon was prepared by Joseph Leeming while in the employ of the American Viscose Corp. He is now with the U. S. Government in Japan. His book is written in a semi-technical style. It states the principal facts about the methods of manufacture, properties and uses of rayon and presents a clear picture of the position of rayon in the present-day world of textiles. There are 15 chapters dealing with: The search for rayon; Chardonnet makes the first rayon; cuprammonium rayon; viscose rayon and acetate rayon; the manufacture of rayon; rayon becomes of age; rayon in World War II; present-day rayon; rayon fabrics; testing rayon fabrics; miscellaneous uses of rayon, world rayon production. There is a good glossary and a bibliography. The book has considerable interest in the field of the general public and the layman.—*Rayon & Syn. Tex.*

Regenerated fibers from wool. R. L. Wormell. *Brit. Rayon & Silk J. 26,* 55 (Feb. 1950).

Regenerated wool fibers can be made by dispersing the wool keratin in a sodium sulfide solution, then passing it through a centrifuge and treating it with acid to precipitate a crude curd of keratin. This can then be dissolved in curammonium hydroxide and treated with acid to precipitate the purified curd. This is dissolved in ammonia and extruded through a spinneret into a neutral bath. A different method is to disperse the keratin in sodium solution and add casein to form the spinning solution which is extruded into a salty bath. Some of the properties of this type of yarn are discussed.

YARN PRODUCTION B

Antistatic textile materials. Arthur L. Fox (to Gen. Aniline & Film Corp.). USP 2 498 408, Feb. 21, 1950.

Textile material containing from about 99 to about 90 parts of a textile lubricating oil and from about 1 to about 10 parts of a dialkyl acid o-phosphate wherein one of the alkyl groups has from 6 to 18 C atoms and the other from 1 to 4 C atoms, the quantity of dialkyl acid o-phosphate present ranging from about 0.1% to about 10%, based on the weight of the treated material, so as to be sufficient to prevent the accumulation of electrical charges in the textile material.

Carding and spinning probed by Alabama men. Anon. *Textile World 100,* 98, 152, 154, 159, 160 (Jan. 1950).

Five questions on carding brought forth mill experiences on: pickers equipped with licker-in type beaters and fringe rolls; one-shot lubrication of pickers; changes to be made when changing from cotton to rayon; the use of ball bearing comb boxes; and the use of continuous strippers. Six questions on spinning discussed sleeve type spindles, advantages and disadvantages of rewinding filling, methods of cleaning spinning frames, the advantages of anti-friction spindles over gravity-type spindles, and the necessity for changing ring flange and circle of the traveler when a frame is changed to a larger ring.

Developments in nep control. Howard L. Loveless. *Textile Bull. 76,* 57-8, 60 (Feb. 1950).

Work in progress at the N. C. State College School of Textiles on neps is reviewed. The counting template, developed in the course of this work, is described and its use discussed. Modifications made in the operation of the card to facilitate the study of neps are also described and illustrated. A method of producing a shadowgraph of card webs is described. This method comprises exposing a sensitized photographic paper over which the web is placed. The light shining through the web thus casts the shadow of the web. Upon development the shadowgraph can be used for further study and as a permanent record.

Fiber and yarn—III. G. Dakin. *Fibres 10,* 283-87 (Aug. 1949).

The prediction of spinning quality is discussed; yarn irregularity and structure are the 2 factors which influence yarn quality. The origin and form of the drafting wave (wavelike variations in thickness of sliver, roving, and yarn caused by attenuation of material by drafting rolls), are described as well as the methods for measuring irregularity and periodicity of the drafting wave. See also TTD: *6,* 338.

Importance of humidity in the processing of the wool fiber. *J. Textile Inst. 41,* P7-8 (Jan. 1950).

The effect of humidity on the wool fiber at the various processing stages is discussed.

Pin board. Fred F. Bahnson. USP 2 497 574, Feb. 14, 1950.

This invention provides a pin board for holding a plurality of yarn packages, such as spools, having a plurality of uprising pins disposed on its bottom portion and having end portions of a height greater than the height of the spools carried thereby and with the end portions having means for receiving a superposed pin board and holding it against longitudinal and lateral sliding movement and holding its bottom portion out of contact with the upper ends of the spools disposed on the pin board below.

Relative humidity and rayon. E. Cotterill. *J. Textile Inst. 41,* P9-15 (Jan. 1950).

The reasons for providing controlled humidity conditions are cited. These are as follows: 1) to help machinery behave uniformly; 2) to help yarns react uniformly to the stresses and strains of the various processes; 3) to control static electricity; 4) to improve yarn flexibility. Graphs showing the relationship between relative humidity and moisture regain, and the relationship between per cent extension and load and wet contraction respectively are also presented. Finally, suitable atmospheric conditions for proper manipulation of rayon are cited. These include: 1) temperature, and 2) proper relative humidities for the storage, winding, warping, weaving, knitting, and twisting of filament viscose, filament acetate, and acetate staple yarns respectively.

Spinning nylon yarn. Anon. *Am. Wool Cotton Reptr. 64,* 11, 20 (Mar. 9, 1950).

Practical suggestions for processing nylon on the cotton and American worsted systems are given. Included are notes on picking, carding, drawing, spinning, dyeing, etc.

Stapling artificial filaments. E. I. duPont de Nemours & Co. Brit. P. 586 017, July 28, 1944.

A tow of continuous cold drawable and/or cold drawn artificial filaments, e.g., nylon filaments, is converted into a spinnable top without destroying the continuity of the tow or the substantial parallelism of the fibers by subjecting the plurality of filaments to stretching and breaking between pairs of rolls, the stretch being simultaneously applied in varying amounts to the individual filaments. Varying degrees of stretch are given to adjacent filaments, prior to breakage, by positioning one pair of rolls at an angle to the other pair or by employing as the second pair rolls having frusto-conical surfaces. A top is produced by the process from which yarn can readily be spun and in which the individual fibers have varying affinities for dyestuffs so that variegated shades may be obtained by dyeing in a single bath.

Waste in worsted spinning; modern methods of control. Anon. *Fibres 11,* 16-17 (Jan. 1950).

The 2 chief types of spinner waste are soft and hard waste. Each of these types is subdivided into white and colored waste, etc. Other types of waste such as faller and brush are also discussed. Suggestions for minimizing production of waste are given. These include: 1) cleanliness; 2) careful attention to oiling; 3) careful setting of spindles; 4) correct atmospheric conditions; 5) purchasing suitable quality tops for the job at hand; and 6) careful control of all mechanical equipment.

Fiber preparation B 1

Converting bulk filaments into staples. Robt. C. Wilkie (to Pacific Mills). Can. P. 455 367, Mar. 22, 1949.

The method of converting a web of filaments into a sliver of drafted staples of different lengths in a continuous movement, which method consists in feeding the web to fracturing means, fracturing the web along steeply oblique lines, varying the angle in the plane of the web at which the web is fed to the fracturing means to produce obliquely extending strips of staples of varying lengths, drafting the staples in the strips to produce a thin web of drafted staples of a variety of lengths and forming the thin web into a sliver.

Dry cleaner for grease wool. Anon. *Am. Wool Cotton Reptr. 64,* 9-10, 50 (Jan. 26, 1950).

An improved open roller unit using "Fialasol", a non-volatile naphtha product, for dry cleaning wool, paint clips, and cotton waste is described. "Fialasol" is claimed to give as good or better results than the volatile chlorinated hydrocarbons (trichloroethylene).

Modern blowing [opening] room technique. N. Pilkington. *Textile Mfr. 75,* 577-81 (Dec. 1949).

In the formation of a lap, the degree of opening imparted to cotton can only proceed up to a certain point. Extreme separation of individual fibers in opening machinery is costly, particularly in lint loss, but, at the same time, the tufts of cotton presented to a lap former must be in a well opened condition.

New automatic lap doffing scutcher. Fr. Nalz. *Textil-Praxis 4,* 98-101 (Mar. 1949); *in German.*

The importance of a good lap for successful spinning is stressed. For cleaning the beater shed, it is recommended that the dust flue be replaced by central or individual filters, thus permitting an air

conditioning system to be installed. As raw cotton passes through the cleaning machinery at great speed, conditioning must be done before cleaning. Bales should be stored in a room having a fixed high temperature and low humidity. An arrangement which regulates the addition of waste in mixing is noted. An important development is a new picker with automatic removal of the finished lap. Two auxiliary motors are used; one drives the lap rollers at a higher speed when the lap has reached its required length. The difference in speed between lap and calendering rollers tears the lap. The second motor, also turned on by the length counter, raises the 2 racks and exposes the spindle of the finished lap. The lap rollers, revolving at their normal speed, and the 2 racks, still rising, move the lap onto the cradle. The first auxiliary motor stops; the second runs in the reverse direction. The racks, moving downwards, place the spindle rod onto the new lap. The brake is engaged and pressure is applied to the new lap. The second motor then stops. The operation of lap-changing takes only a few seconds. It insures an even start and finish of the lap and somewhat greater production. Two other improvements in cleaning described are a new construction of the dust chamber and its cleaning by suction.

Process for converting fibrous material to be processed in the woolen system. Robt. C. Wilkie (to Pacific Mills). USP 2 499 175, Feb. 28, 1950.

In the woolen system of processing, the step in the conversion of fiber stock into noil-like material which consists in cutting a mat of raw stock into diamond-shaped pieces both crosswise and lengthwise of the mat.

Treatment of textile materials. Henry C. Olpin & Alexander J. Wesson (to Celanese Corp. of Am.). USP 2 492 394, Dec. 27, 1949.

Method of simultaneously lubricating and applying a fugitive tint to textile materials having a basis of an organic derivative of cellulose so as to achieve a tint which remains fugitive even on steaming, which comprises applying to the material a tinting medium comprising an acid dyestuff, water, a lubricating oil and a quaternary ammonium salt in which one of the radicals attached to the quaternary nitrogen atom includes an alkyl group having at least 11 C atoms in straight chain arrangement, the proportion of quaternary ammonium salt being sufficiently in excess of that chemically equivalent to the acid dye to bring the dye into solution and to emulsify the oil.

Carding and combing B 2

Attached card fillet to carding engine swifts, etc. Taylor, Yeilding & Co., Ltd. & T. H. Hepworth. Brit. P. 582 560, June 9, 1944.

A device for use when applying card fillet to the swift, etc. of a carding engine comprises frames connected by shafts carried by eccentrics to which the wheels are attached. The manipulation of a hand-wheel turns a quadrant to move the eccentrics through rods to lower the frames onto the floor, or vice versa. An electric motor carried by the frames, drives sprockets through reduction gearing, and the sprocket, through a gear train, drives the clamping device attached to the shaft of the swift, etc. The gear train driving the clamp is carried by a frame rotatable about the shaft of the sprocket so that the vertical height of the clamp may be adjusted to suit the shaft to be driven. A spring-urged pawl and ratchet device is fitted to prevent backward motion of the swift under the pull of the card fillet being applied. The motor, etc., may be fitted with a brake to enable quick stopping to be effected.

Carding engines. Platt Bros. & Co., Ltd. & J. K. Clegg. Brit. P. 582 874, Sept. 22, 1944.

The calender delivery mechanism for a carding engine is characterized in that its carrying frame comprises a base to which a plurality of upstanding pillars are fixed, the bearing blocks for the rollers being adjustably secured as by screws, to the pillars. The bottom roller which has swivel-type bearings is cleared by a clearer mounted on a plate which may be swung outwardly about a bolt and fixed in clearing position by a bolt. The top roller shaft bears directly on the block and is cleared by a clearer loosely attached to the back pillars. The trumpet plate is adjustably mounted on the back pillars, lugs on the plate sliding thereon and being fixable thereto by screws. A further pair of pillars fixed to the base carry a guard for the gearing of the upper roller and coiling mechanism.

Carding engines. Tweedales & Smalley & H. Bolton. Brit. P. 586 334, Sept. 29, 1944.

The back-plate of a carding-engine is secured to the licker-in wings through concentric angle brackets which are adjustable both radially and angularly with respect to the teeth on the card cylinder through eccentrics, formed for manipulation with square heads, which are positioned within slots in the brackets. The brackets are locked in the adjusted position by bolts.

Combing machines. J. Lord. Brit. P. 586 169, Aug. 11, 1944.

A pin circle of a Noble combing-machine is built up of a plurality of concentric rings, the outer ring being dovetailed on its inner face to an intermediate ring to which the other rings are secured. Each ring may be built from a plurality of segments, having one or more slots to receive the pins, the segments being welded together to form the ring.

Peralta machine. W. J. Crofts. *Textlie Industries 114*, 103-5 (Mar. 1950).

Peralta crush rolls are designed to crush and pulverize completely all foreign matter in wool. The fibers are not damaged when subjected to the crush rolls, and there is an appreciable gain in yarn strength. Roll pressures, location, maintenance, static control, etc., for the Peralta machine are discussed, and results obtained by using the machine are described.

Rigid wire versus flexible wire in carding. Andre Varga. *Can. Textile J. 67*, 57-8 (Mar. 3, 1950).

Merits of flexible and garnett wire in wool and cotton carding are discussed by the author who offers suggestions on the most suitable wire for specific purposes.

Drafting and roving B 3

Armstrong's lap resistant roll covers. Anon. *Can. Textile J. 67*, 59 (Mar. 3, 1950).

The new synthetic rubber roll covers prevent lapping in the drafting of synthetic fibers. The lapping is caused by electrokinetic forces existent in adsorbed moisture which tend to cement the fiber and the cot. This is overcome by the addition of certain electrolytic materials to the synthetic rubber.

Design of drafting heads. Ernst Toenniessen. *Textil-Praxis 4*, 101-03 (Mar. 1949); *in German.*

The number of yarn breaks should not be the only criterion for the design of drafting heads. For comparative tests lea tests are recommended rather than single-thread strength tests. Mean and final values obtained in lea tests were more reliable and over a number of tests the lea showed greater accuracy although it required much less time to carry out. Comparative tables are given for staple rayon yarn. It is pointed out that for cotton the number of tests should be greater because of a less uniform staple.

Drawing frame inspection can reduce yarn variations. L. A. McComb. *Textile World 100,* 103, 174, 177, 178, 180 (Jan. 1950).

Drawing frames are often the cause of unknown yarn variations. The following should be checked: rolls for cleanliness; settings for uniformity; bearings for bottom and side wear; roll gearing for backlash and broken teeth; accuracy of front and back stop motions; trumpets for correct bore size; coiler gear for lay of coil; and clearers and clearer cloths. A full discussion of the functions of drawing, variation of sliver, roll diameters and spring weights is given. A table of trumpet diameters is included.

Drawing frames; sliver guides. J. Mackie & Sons, Ltd. & J. P. Mackie. Brit. P. 586 627, Dec. 22, 1944.

A conductor for guiding slivers of flax and like fibers to drawing rollers cooperates with a pair of coaxial pressing rollers, providing a large opening to facilitate the insertion of a new sliver. An arcuate bridge piece resting on the drawing roller is formed with sliver grooves. Upward side extensions hook over a rod and are joined by a cross bar. The conductor is located laterally by lugs which overlap the pressing rollers. The side extensions may slot into the rod instead of hooking thereon.

High-draft fly frames. Reinhold Popp. *Textil-Praxis 4,* 104-06 (1949); *in German.*

A high-draft head of a fly frame was used to make rayon staple rovings with a draft of 12.5. The construction of the head is described. To compare high drafting with multi-passage drafting, tests were conducted for over 3 years with high-draft and ordinary cotton rovings. Both types of rovings were spun under the same conditions on ring frames. Strength tests were made on hanks and the lea strength x count product found for each roving. These values were inversely proportional to the number of yarn breaks. High-draft rovings were found to be inferior to ordinary rovings. No better results were obtained after reconditioning and adjusting the draft head. The high-draft head then was used only where a further doubling was needed. In these instances the tear strength and yarn-break figures were almost normal.

Spinning yarns. J. Mackie & Sons, Ltd. & J. P. Mackie. Brit. P. 586 404, Dec. 22, 1944.

In a mechanism for measuring lengths of sliver delivered from a drawing machine, wherein a bell rings or other indication is given after the delivery of a predetermined length of sliver, the bell striking mechanism is controlled by a ratchet and pawl counting mechanism driven from the delivery roller of the machine, the circumferential length of operation of the pawl on the ratchet wheel being adjustable, without stopping the machine, to alter the "bell length."

Spinning B 4

Automatic knock-off device for ring twisting and spinning machines. Jas. Davidson (to Toronto Carpet Mfg. Co., Ltd.). Can. P. 453 330, Dec. 14, 1948.

In a ring type yarn twisting or spinning machine, the combination of the "feeler knock-off mechanism", the reciprocating cam and the bobbin being wound, of a member extending between the aforesaid cam and "feeler knock-off mechanism" and having an obstructing member to transmit the movement of the cam to the "knock-off" device, and means connected with the obstruction carrying member engaging the perimeter of the yarn wound on the bobbin to move the obstruction between the cam and the "knock-off".

Bobbins. Brit. Belting & Asbestos, Ltd., F. Sykes & G. Haley. Brit. P. 585 734, Sept. 19, 1944.

The end of a yarn is anchored to a bobbin prior to winding thereon by being secured beneath a clip from a U-shaped piece of wire the 2 arms of which engage in grooves, or a recess, in the bobbin and beneath the metal reinforcing ring. The arms may be bent downwardly. In a modification, the clip may be formed from a strip of metal or, alternatively, the clip which may be bent may be brazed to the inside or outside of the ring. The clip is disposed outside the winding area of the bobbin and may also be used to hold the finishing end of the yarn after winding.

Braking arrangements for ring spinning spindles. W. Bodden & Son, Ltd. & F. F. Fletcher. Brit. P. 575 872, Apr. 19, 1944.

In a knee-operated brake for the spindles of ring-spinning frames of the kind in which a brake-member is pivoted to the flange of the spindle bolster shank and rests on the rail of the frame when not in action, and is moved on its pivot to engage the whorl of the spindle, the means for actuating the brake member comprises a 2-armed lever one arm of which depends vertically and is adapted to be pressed forwardly by the knee so to cause the other arm, which is cam-shaped, to engage and operate the brake member. The lever may be carried by a split bracket, adjust-

able on the bolster to which it is clamped by a bolt, or, alternatively, it may be carried by a bracket clamped between the rail and the bolster nut. In this latter case, an elongated hole provides for the adjustment of the bracket.

Doffing apparatus for ring spinning and like frames. Geo. A. R. Foster & Jas. Gregory (to The Brit. Cotton Industry Res. Assn.). Can. P. 453 634, Dec. 28, 1948.

In a doffing apparatus for ring spinning, doubling and twisting frames, means for engaging and raising the full bobbin with the result that some of the yarn thereon unwinds over the lower end of the bobbin onto the spindle, means for catching or picking up the yarn below the bobbin as it so unwinds, and thereby limiting the amount of yarn which winds onto the spindle so that this yarn is readily pulled away with the full bobbin at the succeeding doffing, means for gripping and severing picked up portion of the yarn in such a way as to hold the end leading to the spindle and thence to the traveler and release the end leading to the bobbin.

Drafting roller gearing. Casablancas High Draft Co., Ltd. & J. Noguera. Brit. P. 586 396, Oct. 19, 1944.

The drafting roller gear pinions are supported independently of the rollers, the supporting means allowing of various adjustments but ensuring that the pinions are constantly in mesh.

Flax spinning frame settings for maximum output. S. A. G. Caldwell. *Textile Mfr. 75,* 565-67 (Dec. 1949).

Shape, balance and condition of the flyers contribute materially to smooth running, and spinning frame performance and yarn quality depend largely on efficient maintenance of the flyer eyes.

Flax wet spinning frame as a source of catalytic damage in bleaching. Wm. Honneyman. *Chemistry & Industry,* 663-67 (Sept. 24, 1949).

Catalytic damage is a type of failure occurring in linen cloth in which a short portion of a thread disintegrates, and all threads crossing this portion break, giving a hole resembling a knife cut. The disintegrated thread is blackened and contains copper, usually as the sulfide. It has been weakened by over-oxidation during bleaching, catalyzed by the copper. The effect is more severe with peroxide bleaches than with the older hypochlorite. The copper sulfide deposits were traced back to the trough of hot water employed to soften linen threads in a wet spinning frame.

Brass and copper fittings used on the trough corroded and sulfur compounds present gave rise to copper sulfide. Formation of this compound was reduced by use of stainless steel as beading on the trough lip and as the pipe for heating steam. The residual copper sulfide was due to galvanic corrosion, and complete elimination of it required that all fittings in the spinning trough be made of the same metal and that steam and water pipes be equipped with electrical insulators to prevent stray currents from reaching the spinning trough. All-stainless fittings, though expensive, proved excellent from both corrosion and wear resistance standpoints.

Magazine wrap. Wm. J. Elvin & Elmer R. Stahl (to Camille Dreyfus). Can. P. 455 426, Mar. 22, 1949.

In a spinning device for producing yarn packages having a transfer tail, the combination with means including a ring rail having at least one spinning ring and traveler mounted thereon for winding yarn on a rotating yarn support, of means including a shaft for traversing the ring rail and means operatively connected to the shaft for increasing the length of the downward traverse stroke of the ring rail beyond the normal traverse stroke thereof so as to cause the winding of a relatively small amount of yarn on the yarn support at a point spaced from the main body of yarn, the small amount of yarn being available for use as a transfer tail.

Means for automatically cleaning the rollers of continuous spinning frames [and] like textile machines. Florimond Delepierre & Jules C. Ghesquiers (to Société en Nom Collectif des Brevets Florimond Delepierre). Can. P. 454 422, Feb. 1, 1949.

In a continuous spinning frame or like textile machine having a drawing head with a plurality of bottom rollers arranged one behind the other, top rollers arranged to cooperate with each of the bottom rollers, and clearer rollers arranged to rest upon the top rollers cooperating with the last bottom roller, means for automatically cleaning the clearer rollers, comprising in combination, a trough-like member arranged to slide freely upon the top rollers cooperating with a bottom roller located rearwardly of the last bottom roller, traversing means for the trough-like member, comprising brackets attached thereto and at least one cone rotatably mounted in the brackets and arranged to rest upon the clearer rollers with its axis at an angle to a plane containing the axes of the clearer rollers, and a clearing element

carried by the trough-like member and arranged to make contact with the clearer rollers, so as to remove fluff therefrom during the traversing of the trough-like member.

Method of manufacture of flyers for spinning and like machines. Chas. H. Hattersley. Can. P. 455 114, Mar. 15, 1949.

A method of manufacturing a flyer for spinning and like machines which includes the step of forming flyer legs and a transverse top member in one piece by a cold pressing operation consisting in making a metal blank of suitable shape, forming upstanding marginal ribs along both longitudinal edges of the blank, bending the blank into an inverted U-shape to form a transverse top member and 2 leg portions, and incompletely closing the ribs of the leg portions to form slotted tubes.

Mills acclaim paper bobbins. Anon. *Am. Wool Cotton Reptr. 64*, 11-12, 37 (Feb. 2, 1950).

A report is presented on the spinning questions discussed at the fall meeting of the Alabama Textile Operating Executives.

Ring spinning frames. Am. Viscose Corp. Brit. P. 582 873, Sept. 22, 1944.

To facilitate "lacing-up" etc. the ring of a ring spinning or twisting frame is split and means are provided for varying the distance between the ends of the ring. The ring is preferably of resilient material, tending to spring apart to provide a gap at the split, or vice versa, the means, e.g., an eccentric, for varying the gap being pivotally mounted on the ring rail and operable by a handle against an external flange on the ring to close (or open) the gap. The gap may be of V or other shape.

Ring type frames provide efficiency in wool spinning. Anon. *Textile Industries 114*, 93-4 (Feb. 1950).

The installation of 18 new ring spinning frames to replace 17 spinning mules at Springfield Woolen Mills is reported to save floor space, reduce labor costs, increase production, lower costs in carding, and produce larger packages.

Spinning machines. Bulmer & Lumb, Ltd. & J. R. Kennedy. Brit. P. 586 358, Oct. 28, 1944.

Threads in a spinning or like frame are illuminated, to facilitate observation of broken ends, by a light source located at or near one or both ends of the frame, projecting a horizontal parallel beam along the threads between the front rollers and the guide or top board. The lamp casing

may be provided with a reflector and lenses, and color filters may be used. Light intensity may be controlled through a transformer. The Provisional Specification describes a modification in which a light source is located centrally on the frame and may be adapted to project 2 beams.

Spinning roll for spinning and drawing frames. Edw. J. Courtney. Can. P. 453 587, Dec. 28, 1948.

A spinning roll for spinning and drawing frames and the like comprising a pair of complementary stamped sheet-metal discs arranged reversely to one another and having central registering apertures and each being provided with a peripheral annular flange normal to the body of the disc, the flanges cooperating to provide a seat for a cover, one of the discs being provided with a stamped metal flanged collar, the collar portion being normal to the body of the disc and the flange thereof being fastened to the disc, an elongated sleeve fitting within the collar and extending to either side substantially beyond the faces of the pair of discs, bearing means within the sleeve having a non-rotative shaft receiving portion, a shaft fitting within the portion of the bearing means, releasable positioning means on the shaft adapted to bear against the non-rotative portion of the bearing means, means for securing the discs in back to back relation, and an annular cover carried by the flanges of the dics.

Textile drafting apparatus. Casablancas High Draft Co. Ltd. & J. Noguera. Brit. P. 582 912, Sept. 28, 1944.

Drafting apparatus for textile fibers, of the kind in which the fibers pass between 2 endless belts which are supported by means of transverse rollers, comprises a cradle constituted by 2 independent side plates which are mounted on the belt-supporting rollers, and a 2-pronged tensor, the side plates being maintained in position by engagement with slots in the upper prong of the tensor, the prongs of which are located within the respective belts, in the usual way.

Workable incentive plan for doffers. R. A. Butler & C. H. Peterson. *Textile Industries 114*, 87-91 (Mar. 1950).

A method of paying doffers that combines the pay by the doff and pay by the hank systems is described. An automatic hank counter, developed at the Institute of Textile Technology and which automatically records hanks readings at the time of the doff, is described as it is applied to record the work of the doffers.

Winding and spooling B 5

Automatic hydraulic speed control for wind-up operations. Geo. Ransom. *Textlie Age 14*, 92, 94-5 (Feb. 1950).

Two methods of automatic hydraulic speed control by means of mechanical variable speed transmission units for maintaining substantially constant tension in wind-up operations are described in detail. Formulas for determining horsepower requirements are also given.

Doffing arrangements for flyer spinning machines. J. & T. Boyd, Ltd., H. A. Boyd & M. Warnock. Brit. P. 585 432, Oct. 25, 1944.

Flyer-leg aligning mechanism includes for each flyer a yieldable member movable into engagement with a leg of the flyer and deflectable against spring tension when the leg is in dead center position. The yieldable members are of V-form in plan and are mounted on a bar arranged for movement transversely of its length towards and away from the flyers. When the point of a V-member makes contact with a leg in dead-center position the member turns on its pivot and its arm moves outward against tension from the spring so that the member is enabled to exercise a turning movement on the flyer.

High-speed drive for twisting spindles. Max C. Miller. USP 2 488 311, Nov. 15, 1949.

This invention provides spindle driving devices including a driver of such form and a multiplicity of yarn spindles so grouped with relation to the driver to cause the lightly constructed and delicately mounted yarn twisting spindles to be driven at speeds in the order of 20,000 revolutions and upward per minute without setting up excessive strains or stresses or causing excessive vibration in either the driving or driven parts of the machine. In carrying out the invention, a novel construction and arrangement of the yarn twisting spindles and of the driving connections therefor is provided in a yarn processing machine, which consists in the provision of a rotary yarn spindle driver, a series of yarn twisting spindles grouped in circular relation contiguous to the periphery of the driver to be driven therefrom, and means to establish a driving relation between the driver and each of the spindles. In the preferred form of the invention the machine is entirely supported from a central vertically arranged column on which are carried a circular ring support having series of yarn twisting spindles and bearings for the hub of the rotary yarn spindle driver. The means to establish a driving

connection between the driver and each of the spindles, takes the form of a magnetic field consisting of a series of high density flux areas spaced from one another about the peripheral driving edge of the driver to produce a rapidly moving field of fluctuating strength.

Hollow core or bobbin for textile materials. Henry J. Feeley (to Am. Paper Tube Co.). Can. P. 453 792, Jan. 4, 1949.

A hollow core or bobbin for supporting textile materials comprising a tubular fiber barrel expanded at one end, a metal annulus encircling the expanded end of the barrel, and a head of plastic material enclosing the end of the barrel with the metal annulus embedded therein.

Method and apparatus for collecting yarns. Ingham S. Roberts (to Am. Viscose Corp.). USP 2 485 776, Oct. 25, 1949.

This invention relates to flyer-type twisting and/or doubling machines, and particularly to that type which utilizes an "inverted flyer." The main object of this invention is to so arrange this type of twisting machine that it can be semi-automatically laced up or threaded while the machine is running and thus to make its use particularly advantageous in cases where the yarn is delivered to the machine continuously at high rate of speed. It also provides a novel form of bobbin adapted to co-operate with the various parts of the machine to accomplish semi-automatic lacing, and a package of yarn which will have a "tail" or extension of the inside layer of yarn available to the outside of the package to serve as a means of interconnecting 2 packages to facilitate subsequent continuous unwindng. (See also USP 2 429 330, TTD: *5*, 487.)

Skein winding machine. Frank Osborne (to Wm. Ayrton & Co. Ltd.). Can. P. 454 464, Feb. 8, 1949.

The method of winding skeins of thread of the kind comprising a number of loops adapted to be secured by a paper or like band, with one end of the thread accessible for unwinding, which consists in winding the skeins in continuous and uninterrupted succession on a plurality of holders at a winding station and subsequently severing the skeins in such manner that the end accessible for unwinding is relatively long while the other end is severed in close proximity to the paper or like band, intermittently progressing the holders from the winding station, and subsequently doffing the skein from the holders after the severing operation.

Unit bobbin construction. Earl G. Crooks (to Lestershire Spool & Mfg. Co.). USP 2 499 268, Feb. 28, 1950.

In a bobbin, a unit assembly consisting of a barrel having annular recesses in the ends of the bore, washers seated within the annular recesses and having central bores, and a center tube extending through the bores of the washers with its ends rolled over the outer faces of the washers, thereby locking the parts together.

Yarn package support. Fred W. Paffen & Harry L. Cornelius (to Camille Dreyfus). Can. P. 454 351, Jan. 25, 1949.

A yarn package support having a barrel and a base flange attached thereto, the base flange comprising a disc having a central opening, a peripheral groove around the circumference of the disc and a radial recess extending from the opening to the periphery of the disc and an insert of substantially the same dimensions as the recess mounted in the recess, the insert having at least one groove which when the insert is in position in the recess is at a tangent to the barrel and extends into the peripheral groove.

Yarn processing B 6

Apparatus for treating cords with liquid. Geoffrey C. Brentnall & Harold Smith (to Dunlop Tire & Rubber Goods Co.). Can. P. 453 834, Jan. 4, 1949.

Apparatus for treating cord with liquid comprising a tank to contain a supply of the liquid, a frustro-conical wheel rotatable on a horizontal axis within the tank and adapted so that the periphery thereof contacts with the liquid in the tank, a pair of guide pulleys for the cord disposed one on each side of and substantially coplanar with the wheel, and means for adjusting the plane of rotation of the wheel relatively to the plane of rotation of the guide pulleys while maintaining parallelism of the planes so that cord passing over the guide pulleys is brought into contact with variable quantities of liquid on the periphery of the wheel.

Bobbin holder. Edgar R. Blount (to Camille Dreyfus). Can. P. 453 072, Nov. 30, 1948.

A bobbin holder comprising a head adapted to be secured to a rotatable shaft and an elongated body member extending axially therefrom and having a plurality of circumferentially spaced longitudinal slots, a radially extending arm in each of the slots and capable of a slight longitudinal rocking movement therein, means normally rocking the arms so that their ends farthest removed from the head are depressed, and means adapted to cooperate with a bobbin being placed on the holder for rocking the arms so that their aforesaid ends are protracted into gripping contact with the bobbin.

Cord processing apparatus. Raymond E. Solliday & Herbert E. Riggs (to Wingfoot Corp.). Can. P. 454 438, Feb. 1, 1949.

In a thread processing apparatus embodying a plurality of thread supply packages, means joining the several threads, twisting means, and positively driven feeding means for delivering the joined threads to the twisting means at a substantially constant rate, rotatable burnishing means between the feeding means and the twisting means for contact with the joined threads, means actuating the feeding means and the burnishing means, and differential drive means associated with the actuating means to afford a rotational speed differential between the feeding means and the burnishing means.

Drying of textile materials. Jas. W. Illingworth (to Dunlop Tire & Rubber Goods Co. Ltd.). Can. P. 453 833, Jan. 4, 1949.

The process of treating textile materials such as fabrics, cords and yarns which comprises impregnating the textile material with an aqueous dispersion of rubber hydrocarbons and phenolic resin forming reagents and subjecting the textile material for a fraction of a second to dry steam at substantially atmospheric pressure and at a tempertaure of about 140°C.

Good top-roll covers vital to quality yarns. E. H. Helliwell. *Textile World 100*, 89, 170, 172, 174 (Jan. 1950).

Cot manufacturers can control within close limits the properties of their cots. A schedule for measuring the amount of wear on the cots and buffing them to prevent uneven drafting will pay. Careful check must also be made to hold the size of the rolls within limits; neither buffing below size nor using new rolls that are too large. Sometimes a light buffing will reduce the tendency of a roll to form eyebrows.

Method of an apparatus for treating twisted filamentary materials. Hayden B. Kline & Alden H. Burkholder (to Industrial Rayon Corp.). Can. P. 453 674, Dec. 28, 1948.

The method of reducing the liveliness of a substantially air dry lively twisted non-metallic filamentary material which comprises subjecting a

wound package of the material to the action of a high frequency electrical field.

Stretching cellulose yarns. Dunlop Rubber Co., Ltd., Dunlop Cotton Mills, Ltd. J. W. Illingworth & L. F. Pickup. Brit. P. 586 105, Dec. 23, 1944.

Cellulose yarns or cords which have been stretched in steam are subjected to a further steaming operation under a tension sufficiently small to allow them to retract whereby their extensibility is increased.

Supporting spindle for yarn packages. Alexander Robertson. USP 2 497 796, Feb. 14, 1950.

The present invention consists primarily in providing longitudinal passages in the outer surface of the spindle by radially upsetting or deforming the normally cylindrical wall of a seamless tube composed of acid resisting metal, such as "stainless steel". In one end of the tube is rigidly secured, as by welding, a short threaded stud on which is mounted the clamp nut normally employed for securing a yarn package in place on the spindle. The opposite end of the tube, after the tube has been collapsed to form the longitudinal grooves, is rigidly mounted in an axial bore formed in an externally threaded plug fitting, by which the spindle may be mounted in the hollow head through which the processing fluid is circulated.

Thread feed arresting device. John T. Gordon & Raymond E. Solliday (to Wingfoot Corp.). Can. P. 453 066, Nov. 30, 1948.

Thread feed arresting mechanism for controlling the travel of thread and the like through apparatus embodying the delivery of individual threads from each of a plurality of supply packages to a collecting means on which the threads are collected in the form of a composite thread bundle, the arresting mechanism comprising an abutment about which the individual threads pass, severing means co-acting with the abutment for simultaneously cutting all of the individual threads, means swingably supporting the severing means, means holding the severing means out of contact with the abutment, trip means for releasing the holding means and causing the severing means to operate, a weighted lever arm supported by each individual thread for actuating the trip means upon the interruption of the supply of the thread, a guide means in contact with which the thread bundle passes, biasing means for retracting the guide means which actuates the trip means when the thread bundle is broken, and disengageable locking means for temporarily retaining the several elements of the mechanism in inoperative relation until the mechanism has been completely threaded up.

Treatment of yarns. Frank R. Scull (to Camille Dreyfus). Can. P. 454 059, Jan. 11, 1949.

Apparatus for converting a yarn into a continuous product containing staple fiber comprising, in combination with take-up means for giving travel to the yarn, abrasive means including a support having thereon a plurality of cylindrical members having an abrasive surface and a plurality of cylindrical members having a smooth surface adapted to be in contact with the yarn during the conversion operation, and means for reciprocating the support in a direction coextensive with the direction of travel of the yarn.

Yarn treatment. Frederick F. Sutherland & Donald K. Wilson (to Camille Dreyfus). Can. P. 455 424, Mar. 22, 1949.

Apparatus for the application of liquid media to running yarns and threads, comprising a vessel for containing a liquid, a cover for the vessel including yarn entry and exit means, a rod mounted in the cover, yarn guide means on the rod both inside and outside the vessel for guiding a running yarn along a controlled path through the vessel and the liquid contained therein and stripping means mounted on the rod within the vessel and in the path of the running yarn for stripping excess liquid from the wetted yarn.

Winding yarn. Arundel, Coulthard & Co., Ltd. L. H. Bateman & C. O. Burgess. Brit. P. 586 069, Oct. 7, 1944.

In a yarn winding machine of the drum-driven type, the traverse of the yarn being effected by the drum, or otherwise, means are provided for slightly and intermittently easing the driving pressure between the package and the drum so to destroy the harmony between the rate of rotation of the package and the rate of reciprocation of the yarn across the package.

Winding yarn. Clark Thread Co. Brit. P. 586 290, Aug. 15, 1944.

A mechanism for controlling the winding of predetermined lengths of yarn by a winding machine having detent mechanism which is disengaged to stop the winder, comprises a timer wheel geared to the winder to make one revolution during the winding of the desired length of yarn, a cam rotatable with the timer wheel and means for disengaging the detent mechanism including a member normally in the path of travel of the cam to

be engaged thereby to interrupt the drive when the desired quantity of yarn has been wound.

Special yarns B 7

Asbestos yarns. Am. Viscose Corp. Brit. P. 577 623, May 9, 1941.

A yarn which may be used in making materials for electrical insulation, packing, etc., comprises asbestos and a minor proportion of organic fibers, at least 9.25% of the organic fibers being viscose rayon staple fibers. The viscose fibers, which may be crimped, are preferably of a size between ½ to 2 den. and of a length between 1 and 3 in. The balance of organic fibers is preferably cotton and the total proportions of organic fibers between 10 and 25%. The asbestos grade is preferably such that a predominant proportion thereof will pass through a screen of ½-in. mesh.

Change gears control yarn tension in fiber bonding machine. Anon. *Product Eng. 20,* 90-3 (Apr. 1949).

The machine developed for impregnating yarns with synthetic resins by the Dan River Mills "Fiber Bonded" process is described and illustrated. One machine performs all stages of the process—unwinding, impregnation, stretching, curing and rewinding. The critical feature in the operation is yarn tension, which must be varied for different phases of the process and for different textiles. Numerous illustrations of the machine are shown including both photographs and diagrammatic sketches. A circuit diagram is also shown.

Fabric and fabric making materials. Godfrey Bloch. Can. P. 454 073, Jan. 18, 1949.

As a substitute for wool, a product composed of purposely distorted artificial filamentary fibers spun into yarn form and having multiple points of contact, the distortion of the fibers forming myriad air pockets, the fibers being fixed together at points of intersection to maintain the fibers in their original positions and prevent relative movement thereof thereby retaining the air pockets in the yarn.

Novelty yarns made on tricot machines. C. W. Bendigo. *Textile World 100,* 83-5 (Jan. 1950).

A method of producing ribbons or fancy yarns on tricot machines has been developed and patented. The ribbons or yarns are so designed that the tricot fabric can be pulled apart or "unzipped" after it has been woven. The fabric may be dyed or otherwise processed and even put on a loom beam before being pulled apart. The fancy yarns can be used as warp or filling and can be plied or twisted.

Yarn products B 8

Manufacture of composite products of rubber and rayon and the products obtained thereby. Jas. W. Illingworth & Evelyn W. Madge (to Dunlop Tire & Rubber Corp.). USP 2 497 454, Feb. 14, 1950.

Viscose rayon cords are bonded to vulcanized rubber by a reaction product of formaldehyde and phenol.

Tire fabrics. C. G. Bonard. Brit. P. 586 201, July 24, 1944.

A tire fabric has weft capable of dissolving in rubber at vulcanization temperatures, though it does not exhibit rubber-like elasticity at atmospheric temperatures. The weft may be polystyrene, polythene, or other hydrocarbon polymers, cyclized rubber, or certain cellulose ethers. The warp cords may be cotton, linear condensation polymers, polyvinylidene chloride, regenerated cellulose (particularly stretched and saponified continuous cellulose acetate filaments).

Yarns and threads. Callender-Suchy Developments, Ltd. & C. T. Suchy. Brit. P. 587 046, Oct. 19, 1944.

A method of manufacturing metallized threads from non-conductive material consists in metallizing a non-conductive fabric woven with warps of required denier and widely-spaced wefts, and then collecting the warps on separate spools, the wefts being removed and discarded during the spooling operation. The fabric is unrolled from a storage roll provided with braking device, and the warp threads are collected on separate spools, the wefts being removed by a suitably timed rotating hook. The fabric is preferably metallized by electrodeposition.

Yarn testing and numbering B 10

Yarn-holding cards. Cheslene & Crepes, Ltd. & M. Nava. Brit. P. 582 787, July 21, 1944.

A card for holding textile yarns, etc., wound thereon, has along 2 opposite edges substantially semicircular recesses, each recess having a slit at the bottom thereof and being furnished adjacently with a further slit, so that the beginning and end of each wound yarn may be secured in a slit. Perforations, etc., may be provided for separating off a yarn-carrying strip.

FABRIC PRODUCTION C

Yarn preparation C 1

Filament yarns for weaving and knitting. Anon. *Brit. Rayon & Silk J. 26*, 43-4 (Feb. 1950).

This is a summary of a series of talks made at a conference at Macclesfield. Twisting increases the strength of filament yarns up to a point, beyond which additional twist is injurious. Two hypotheses seem to be: 1) individual filaments follow helical paths and the diameter of the helix is approximately that of a monofilament of the same density; 2) filaments are stretched as a result of twist given the yarn and the yarn ruptures when the limit of elongation of the filaments is exceeded. Another discussion dealt with modern throwing machinery and its development. Effects and elimination of static electricity were the subject of another discussion. The evolution and present techniques of sizing filament rayon were discussed and the suggestion of sizing during the continuous spinning operation was put forward as a future possibility. The ideal yarn for the knitter was said to be knot-free, a single yarn, with no twist, of circular cross-section, not too elastic, and having a constant degree of natural drag.

Cotton system slashing pays in ribbon mill. E. Dalton White. *Textile World 100*, 117, 119 (Jan. 1950).

A change from silk to cotton method of slashing synthetic-fiber warps eliminated many problems. Speeds of 40 yds. per min. were obtained with sets containing up to 5,600 ends. Other features include: automatic speed controls, 7 beam creel, temperature control for each cylinder, and automatic size level control for size box.

Method of preparing starch paste. Jas. P. Casey (to A. E. Stalev Mfg. Co.). USP 2 472 790, June 14, 1949.

A method of preparing an enzyme-thinned starch paste comprises providing a slurry of water, starch-liquefying enzyme, and a plurality of starches at least one of which has been modified so that its enzyme-converting temperature is lowered around 15°F. The slurry is heated to the enzyme-converting temperature of the starch having the lowest enzyme-converting temperature, and the slurry temperature is maintained at this value until the corresponding starch has been thinned by the enzyme. The slurry temperature is then raised to the enzyme-converting temperature of the starch having the highest enzyme-converting temperature, and the heating is continued at a temperature below the inactivation temperature of the enzyme until the starches have been thinned by the enzyme.

Multi-motor slasher drives. R. R. Prechter. *Am. Wool Cotton Reptr. 64*, 13-14 (Mar. 9, 1950).

Multi-motor slasher drives which provide controlled power at the size box, dry cans, delivery roll, and beam will result in close control over yarn tension at all points within the slasher and in adequate moisture control. Operation of the multi-motor slasher drive is described.

Pepperell uses pearl starch. Anon. *Textile Industries 114*, 89-92 (Feb. 1950).

Information on the Gaulin Homogenizer installation at the Pepperell Alabama plant is discussed. A thick-boiling pearl corn starch in liquid form has been sustituted for modified, thin-boiling corn starch in its size mix. Shedding is noticeably less, and there is thought to be an improvement in weaving efficiency. Other experiences with homogenizers, furnished by an equipment manufacturer and a textile mill, are given.

Problems in sizing. Jens Jensen. *Tids. Textilteknik 8*, 2-6 (Jan. 1950); *in Danish.* (Communication No. 45 from the Danish Textile Research Institute.)

In this article the author gives some views on sizing problems generally with a special emphasis on the difficulties encountered when attempting to obtain a reliable expression for the effect of sizing. Reference is made to a number of conditions of importance to sizing with starch. The article finally contains some considerations on the possible importance of the research work to the development of the sizing process.

Raw-nylon sizing is critical operation [from duPont Nylon Technical Service Bull.]. *Textile World 100*, 93, 164, 166 (Jan. 1950).

Continuous filament nylon for weaving should have slasher-size applied to the raw nylon. Tyze resin textile size seems to have given the best results so far. This necessitates the use of non-corrosive equipment for the wet yarn. Sample formulas and different oils that may be used are discussed. Elvanol 51-05, a non acidic size, may also be used. A sample formula and processing hints are given for this size. Details of the slasher operation are discussed.

Textile apparatus. Richard H. Baines, Thos. Eccles & Stephen M. Fulton (to Camille Dreyfus). Can. P. 455 425, Mar. 22, 1949.

A leasing comb comprising a bottom baulk, a series of long and short dents secured to the bottom baulk and alternating along the length thereof, the spaces for the accommodation of warp threads between each short dent and the 2 adjacent dents being of different depths, and a top baulk adapted to space apart and to secure in spaced relationship the tops of the long dents, the top baulk detachable from the dents so as to leave spaces between the dents clear for warp threads to be dropped between the dents.

Weaving C 2

Beat-up motion for looms. D. W. Shimwell. Brit. P. 587 025, Nov. 24, 1944.

In a beat-up motion in which the shuttle race and reed travel further forward than the shuttle boxes, the sword carrying the race and reed is pivoted on the sword carrying the shuttle box, and a lever fulcrummed on the sword is coupled by a link to the sword. The sword is operated by a crank and the sword moves with it until the shuttle is boxed, after which a roller is depressed by the portion of a cam track, thereby moving the reed to the beat-up position, in which the lever is aligned with the link and the thrust is taken by the pivot.

Beat-up motions for shuttleless looms. C. H. Baddeley. Brit. P. 586 237, Oct. 30, 1944.

In a shuttleless loom, the lay is reciprocated horizontally by a connecting rod, the length and throw of which are adjustable, or by a worm engaging a rack attached to the lay. The weft carrier drum is driven by bevel gears from a pinion rolling on a fixed rack. The lay runs on rollers or slides on vee guides.

Circular and skip-box motions. W. Middlebrook. *Textile Mfr. 75,* 571-73 (Dec. 1949).

This is a detailed discussion of circular and skip-box motions. The skip-box motion makes it possible to bring into play any one of the 6 shuttles in a revolving box loom.

Crankshaft mounting for looms. Wm. H. Bahan (to Edw. F. Bahan). USP 2 499 050, Feb. 28, 1950.

In a loom having side frames and a crank shaft, a girt member having means for securing the ends thereof to the side frames and bringing the gap between the 2 side frames, the girt member being arcuate in cross-section and having an enlarged arcuate portion near each end, one side of the girt member having vertically disposed faces on each

side of the enlarged arcuate portion, the vertical faces having semi-circular bearing portions cut therein, the 4 bearing portions for the girt being in alignment with each other, and being adapted to receive the crank shaft, which has a pair of crank throws each of which is adapted to rotate in the enlarged arcuate portions of the girt, and a plurality of semi-circular bearing caps adapted to be secured over the semi-circular bearings for providing 4 bearings in the girt for the crank shaft, there being a bearing disposed on each side of the crank throws of the crank shaft.

Design and production of dress fabrics with fancy yarns—II. A. T. C. Robinson. *Silk & Rayon 24,* 160, 165-66 (Feb. 1950).

The construction of a yarn-dyed bouclette check, an armured bouclé crepe, a tree-bark bouclette, a warp-way rib, a bouclé shadow diagonal, a moss crepe with bouclé overcheck, a bouclé overcheck on georgette ground, and a crepe bouclette is discussed. The use of loop yarns and mossy loop yarns is also discussed.

Device for tightening the weft in circular looms. Victor M. P. Ancet (to Marius Fayolle). Can. P. 454 252, Jan. 18, 1949.

In a circular weaving loom, and chiefly in a loom having a vertical axis, the provision of a sprocket wheel adapted to engage the sheet of warp threads in the vicinity of the point at which the weft thread is to engage the sheet, and the axis of which forms an oblique angle with the vertical inside the diametrical vertical plane passing through the center of the wheel.

Effect of oscillating whip roll on depth of shed of silk and rayon loom. E. Ullrich. *Textil-Praxis 4,* 63 (Feb. 1949); *in German.*

The reasons for a long back shed are discussed and it is pointed out that an oscillating whip roll is only partly equivalent to depth of the shed on a silk loom. Advantages of a short back shed include reduced wear on warp threads. With an oscillating whip roll, tension is balanced at closed and open shed and increases at the beat-up with dense fabrics. It is neither necessary nor desirable to have the high tension for the beat-up while the shed is forming. A device to give correctly adjusted warp tension is described and illustrated. Its features include an oscillating whip roll, a compensating spring and a cam.

Electromagnetically controlled dobby. Anon. *Textil-Praxis 4,* 60-3 (Feb. 1949); *in German.*

A Swiss firm has developed a machine to produce

weaving designs by the Schildknecht system. The development of the weave is shown in stages on a number of point-paper diagrams. Shafts are controlled electromagnetically from a switchboard mounted on the machine. Plugs are inserted in the switchboard to change the tie-up. Each row of the dobby card may be made to control any one, or more, of the shafts, permitting a great number of changes to be made in the weave. Control points (contacts for plugging) are equal to the square of the number of shafts. The company also produces a double-lift dobby with electromagnetic and mechanical control of the shafts. The switchboards and the arrangement for separate actuation of the upper and lower draw knives are illustrated by photos. This is achieved by use of 2 additional switchboards. The dual control makes it possible to produce entirely new rows in the weave with a pair of contact rows. The card is punched to make 2 contact rows for each one on the diagram. Draw knives are controlled from alternate rows, each through a switchboard. The 2 "units" (draw knife controls) are separate.

Electronic weft detector for looms. Victor F. Sepavich & John C. Manoog (to Crompton & Knowles Loom Works). Can. P. 452 311, Nov. 2, 1948.

An electric weft detecting system for a loom utilizing an electronic circuit.

Fabrics with identification marks. Gourock Ropework Co., Ltd. & H. A. Elkin. Brit. P. 586 079, Nov. 2, 1944.

A plain-woven fabric has broken colored identification lines at intervals across its width, each such line being produced by at least one ply of contrasting color in a warp contining at least 2 plies of another color, preferably the same color as the rest of the fabric.

Filling-fork grid. Wm. P. Squires (5% to J. O. Gison & 5% to Waldo De Loache). USP 2 498 610, Feb. 21, 1950.

A filling-fork grid adapted to be precision mounted on a loom, comprising a bracket member having an attaching portion adapted to be secured to the loom and a grid supporting portion; and a grid member carried by the supporting portion in a fixed position relative to the attaching portion, the grid having a quick detachable snap action connection to the grid supporting portion permitting the grid member to be readily removed and replaced in its fixed position relative to the attaching portion without disturbing the precision mounting.

Filament spun broadcloth. Anon. *Am. Wool Cotton Reptr. 64*, 9-10 (Mar. 2, 1950).

A rayon filament spun broadcloth, one of the newer developments in fabric construction, is analyzed. The broadcloth combines a filling of spun viscose yarn in heavier denier and longer fiber with a fine filament soft acetate yarn warp. The arrangement of yarns is similar to that in many of the older-type poplins or broadcloths. A smoother cloth is produced than would be obtained if spun yarns were used in both warp and filling directions.

Flywheel on loom motor permits high speeds, low power cost. R. J. Demartini. *Textile Industries 114*, 109-11 (Mar. 1950).

The inclusion of a flywheel in the drive system of a loom is discussed. Mill experience with the flywheel-equipped motor has shown that looms may be operated at higher speeds and at lower power cost.

Loom becomes a weaving machine. Anon. *Silk & Rayon 24*, 170, 172 (Feb. 1950).

Features of the Saurer 100W loom are described.

Loom development: a new principle of design. A. S. C. Hart. *Textile Mfr. 902*, 61-2 (Feb. 1950).

This is a brief discussion of a loom with a fixed reed and lay. According to the new principle the reed remains stationary at all times and the fell of the warp is brought to the reed. In addition to the actual fell of the warp, a small length of the woven material plus that part of the warp forming the shed will be caused to move. The combined mass of all these moving parts will be less than the conventional lay complete with reed, etc. It is said that the new principle permits a reduced shed which will require less total movement; the movement of the fell to the reed would be less for a given size of shuttle than that required for the moving reed loom. Picking could be speeded up by approximately 30%. The principles discussed are embraced in an application for patent rights by the author.

Loom drives. Franz Meiss. *Textil-Praxis 4*, 67-9 (Feb. 1949); *in German.*

In this review of loom drives the power requirements of a loom are noted and the features of specially designed motors are noted.

Loom for weaving. Wm. C. Angus & Jos. R. Wylde (to Camille Dreyfus). Can. P. 454 754, Feb. 22, 1949.

A loom for weaving comprising a back-rest [whip roll] for the deflection and guiding of the warps

on their way from the warp beam to the fell of the fabric, a horizontal wedge adapted to maintain the back-rest [whip roll] in a raised position, means for stopping the loom upon failure of the shuttle to enter a shuttle box, and means in association with the stopping means for displacing the wedge so as to release the back-rest [whip roll] and slacken the warps.

Loom shuttle guards. J. Nelson Ltd. & S. Brown. Brit. P. 585 579, Nov. 4, 1944.

A loom shuttle guard comprising front and rear rods is provided with cranked portions connected to the hand rail by springs. The cranks are so disposed that the springs hold the rods either in the operative and guarding position or in the inoperative position. Each bar is formed in 2 lengths each of which is pivoted independently of the other, so that it can be turned back to its inoperative position without affecting the other portion.

Loom shuttles. J. Pilkington & Pilkingtons, Ltd. Brit. P. 585 985, Dec. 28, 1944.

A loom shuttle, of the kind in which the cop supporting tongue is pivotally mounted, has an adjustable abutment member for holding the shuttle tongue in the operative position. The abutment member consists of a rotatable pin held frictionally within a bore through the shuttle body. The pin may be in the form of a bolt, having a head and a nut which have slots or other means for turning the bolt, and an eccentric central portion forming the abutment.

Loom stop-motions. A. G. der Eisen-und Stahlwerke Vorm. G. Fischer. Brit. P. 586 214, Sept. 19, 1944.

In a loom in which the starting handle can be disengaged from its weaving setting by a lever pivoted on the breast beam, the handle is arrested in the stopping position on weft or warp breakage, but is allowed to move beyond this position on weft exhaustion to initiate automatic weft replenishment; alternatively, weft breakage may initiate replenishment.

Looms. O. Zollikofer. Brit. P. 585 824, Apr. 25, 1944.

A motor-driven loom having a clutch- coupling between the motor and the loom main shaft and a brake, applied to the shaft, is started by a control handle which operates in one direction of movement to release the brake and in the other direction to engage the coupling.

Looms. Brit. Cotton Industry Res. Assn., E. W. Cummings, G. Grogan & I. H. Thomas. Brit. P. 581 463, July 7, 1941.

A device for measuring the rotation of the hand wheel of a loom in measuring or adjusting the loom settings comprises a plate graduated angularly and friction tight upon a spindle mounted eccentrically to the hand wheel, and a gravity biased pointer rotatably mounted upon the spindle and bearing an index mark working on the scale of the graduated plate. The plate may have adjustably mounted upon it indicating members which can be set at the position at which the picker band becomes taut and at the shed-closing position. The speed of projection of the shuttle can be determined from the distance moved by the picker during 30° rotation of the top shaft immediately after the picker strap becomes taut, and a measuring tape is provided with a hook arranged to pass around the end of the picker band and under the usual peg so as to measure the movement of the picker. A sector of the necessary angle is mounted upon the spindle so that the movement of the top shaft can be readily ascertained.

Means for use in the designing of woven fabrics. David M. Cooper. USP 2 495 054, Jan. 17, 1950.

A patterning set comprising 3 groups of blocks adapted to represent the raised portions of the threads forming a fabric, each of the 3 groups of blocks consisting of at least 2 sub-groups of blocks, all the blocks being of equal width, but the blocks of the first of the groups of blocks having a relatively small length and a relatively small height, the blocks of the second of the groups of blocks, having a medium length and medium height, and the blocks of the third of the groups of blocks having a relatively great length and relatively great height, and the blocks of each of the sub-groups of blocks differing in color from the blocks of the other sub-groups of blocks of the same group of blocks.

Method and device for making fabrics on gripper looms. Erwin Pfarrwaller (to Sulzer Frere, S. A.). Can. P. 454 749, Feb. 22, 1949.

Method for making fabrics on gripper looms, whereby at least one end of the weft thread inserted into the shed and projecting beyond the edge of the fabric is temporarily held by means of a device for gripping and holding, characterized in that a change is made during the working of the loom in the clamping force adopted for holding a thread end.

Picker stick. Heinz Menking (to Aluminum Co. of Am.). Can. P. 453 621, Dec. 28, 1948.

A picker stick made of magnesic metal.

Picker stick and mounting therefor. Worth C. Payne (10% to Zachariah H. Howerton, Sr. & 10% to Frank J. Robinson). USP 2 499 256, Feb. 28, 1950.

A picker stick and mounting comprising a laterally extending stud mounted on a loom parallel, a picker stick having a notch opening through one edge near its lower end for receiving the stud and pivotally supporting the picker stick on the parallel and means on the picker stick closing the open end of the notch and movable automatically out of notch closing position when the normal movement of the picker stick is obstructed.

Picker stick check. Chas. Galland. USP 2 499 023, Feb. 28, 1950.

A picker stick check.

Rayon checked puff. Anon. *Am. Wool Cotton Reptr. 64*, 9-10, 37 (Feb. 2, 1950).

Puffed rayon fabrics, having crinkles or puffs in both the warp and filling directions, are produced by methods which apply to both warp and filling fabrics. A rayon checked puff fabric is analyzed which employs both hard-twisted viscose and normal-twisted acetate yarn in both warp and filling. The stability of the fabric is regulated largely by the amount of yarn denier of the hard-twisted yarns, and the amount of puff is regulated by that portion of the cloth where normal yarn is used and by the relation between the hard-twisted and normal yarn.

Resilient mounting for bobbin magazines. Carl P. Bergstrom (to Crompton & Knowles Loom Works). USP 2 490 402, Dec. 6, 1949.

In a weft replenishing loom, of the multicolor type, there is provided a mounting means for the magazine including a stationary part and a part moving with the magazine connected to the stationary part by a resilient material, such as rubber, which because of its resiliency holds the magazine in one of its operating positions, but permits rocking of the magazine to its other operating postion.

Sectional weaving loom. Pierre G. E. A. Vanlaer. Can. P. 453 613, Dec. 28, 1948.

A sectional weaving loom with centrifugal weft drive comprising a central rotor, a number of vertical warps, disposed tangentially to the rotor. rows of cams adjustably mounted on the rotor

and adapted to shift the warp yarns and form the shed successively in each section, a horizontal impeller plate revolving at high speed for each section, travelers shot through the shed by a centrifugal effect produced by the impeller plates, means for guiding each traveler of one impeller plate to the impeller plate of the following section through the shed and means whereby the travelers draw the weft yarns, pick by pick, between the warp yarns.

Shedding means for circular looms for weaving. Henry J. Cooper. Can. P. 453 586, Dec. 28, 1948.

Shedding means for circular looms for weaving, comprising oscillatable warp thread shedding blades, shedding blade spacers, a ring or ring segment on which all the shedding blades and spacers are mounted, and a projection on the ring or ring segment whereby it is supported in position in the loom.

Shuttle checking device for looms. Adolphe Zarn. USP 2 498 022, Feb. 21, 1950.

A shuttle checking device for looms comprises a casing, a cylindrical body with the casing, a buffer head carried by the casing, a piston engaging the buffer head and adapted to penetrate into the cylindrical body with play between the piston and the cylindrical walls of the body, a sealing collar enclosing the piston and located within the casing, a valve on the cylindrical body substantially above the collar for the withdrawal of air from the cylindrical body, and means forming a conduit connecting the interior of the cylindrical body with the bottom portion of the interior of the casing, whereby air in the interior of the casing is prevented from reaching the interior of the cylindrical body.

Shuttle position detector mechanism. Jas. M. Tuten (to Draper Corp.). USP 2 497 281, Feb. 14, 1950.

This invention provides a simplified and lighter shuttle position detector mechanism for a loom. comprising biased protector elements each including a dagger, the elements being rigidly interconnected for substantially identical rotation with respect to time and extent of rotation by means including a tube whereby coincidental operation of the daggers is insured.

Side slipping weft detector for looms. Herbert A. Whitin (to Crompton & Knowles Loom Works). USP 2 498 322, Feb. 21, 1950.

In side slipping weft detecting mechanism in-

cluding a detector lever movable about the axis thereof from the normal position thereof to indicate weft exhaustion, a rearwardly extending arm on the lever, a housing mounted on the top of the lever and arm, removable means adjacent to the forward end of the housing securing the latter to the lever, clips on the housing fitting under the rear part of the arm, and a detector finger slidably mounted through the housing, the removable means when removed permitting the housing to slide rearwardly on the lever and arm to disengage the clips from the arm to effect removal of the housing from the lever.

Textile apparatus. Basil G. B. Slocombe & Stephen M. Fulton (to Camille Dreyfus). Can. P. 455 241, Mar. 15, 1949.

A warp beam flange assembly adapted for attachment to the threaded end of a beam barrel the assembly comprising a long collar and a flange carried by the collar at the inner end thereof, the collar having part of its bore adjacent to the outer end thereof screw threaded for attachment and adjustment on the beam barrel and having the outer end obstructed to prevent the emergence therefrom and consequent exposure of the threaded end of the barrel, the part of the bore of the collar adjacent to the inner end thereof being left plain, whereby the plain part of the bore covers, in the outermost position of the flange, screw threads of the barrel that are engaged by the threaded part of the bore in the innermost position of the flange.

Uneven spacing of reed wires. I. Laird. *Textile Mfr. 76,* 69-72 (Feb. 1950).

I.—Uneven spacing of reed wires is responsible for defects in many cloths, particularly the finer ones. While it is impossible to examine all reeds microscopically, it is advisable to have samples from different deliveries of reeds tested from time to time. Methods of examining reeds by visual observation, a reed viewer, microscopic examination, and photographic means are described. (To be cont.).

Warp beam. Heinz Menking (to Aluminum Co. of Am.). Can. P. 453 388, Dec. 21, 1948.

A metal warp beam comprising 2 heads, a barrel portion, and a collar member having integral internal solid ribs therein positioned at each end of the barrel and in the interior thereof and rigidly secured both to the adjacent head and to the barrel, the internal solid ribs of the collars being parallel to the axis of the barrel and extending over a substantial portion of the length

of the collar, the solid ribs also having threaded openings therein to receive screw fastening means for securing the heads to the collars.

Weft feeler arrangements for looms. A. G. der Eisen-und Stahlwerke Vorm. G. Fischer. Brit. P. 585 815, Feb. 14, 1944.

A safety device for a sliding weft feeler for a loom includes a striker plate fixed to the feeler head of a feeler needle which is laterally and rearwardly yieldable. When the feeler head does not penetrate into the usual slot in the shuttle, the plate bears against a stop and the feeler needle is prevented from yielding laterally.

Width and length contraction in cotton fabrics. John H. Strong. *Textile Mercury & Argus 122,* 270-75 (Feb. 17, 1950).

In this discussion of width and length contraction, 6 rules are given for calculating widthwise contraction and 8 rules are given for calculating warpwise contraction. Examples are given for calculating the contraction of cloths of different constructions. An empirical method, based upon carefully kept records is also recommended.

Knitting C 3

Controlled finishing of nylon knit fabrics. A. J. Nisbet. *Papers Am. Assn. Tex. Tech. 5,* 11-21 (Dec. 1949).

See TTD: *6,* 946.

Cutting mechanism for knitting machines. John H. Schaefer, Jr. (to The Vaughan Knitting Co., Inc.). USP 2 498 096, Feb. 21, 1950.

Cutting mechanism for a circular knitting machine which continually produces a string of individually pressed-off stocking blanks or the like in succession, with one blank connected to the next by a longitudinally-extending segment of one of the knitting threads, the mechanism including a severing device; means for supporting the severing device in a normally retracted position out of the path of the string of blanks coming from the machine; and means actuated during each blank knitting cycle to advance the severing device into cutting position in the interval between a contiguous pair of the blanks of the string and incidentally operate it to sever the thread segment connecting the blanks of such pair.

Circular knitting machine. Chas. W. Perkins. USP 2 498 447, Feb. 21, 1950.

A mechanism for a circular knitting machine of the cylinder type comprising a cam associated

with the pattern drum of the machine, a pivoted lever and a plate freely mounted on the same axis, a spring connected between the lever and the plate, the action of the cam serving to spring-load the lever, 2 cam profiles engaged by the lever, a sliding clutch member associated with the cam profiles, a gap through which the lever can move from engagement with one cam profile to engagement with the other, another spring connected to the lever, the further spring becoming active on the lever when the cam on the pattern drum ceases to be effective, whereby the lever is oppositely spring-loaded, the lever in conjunction with the cam profiles serving to move the clutch member slidably, the clutch member being adapted in one position to be associated with means for effecting continuous rotary movement of the needle cylinder and in the other position to be associated with means for effecting reciprocatory movement of the needle cylinder.

Clutch mechanism of knitting machine. Frederick E. Deans (to The Bentley Eng. Co. Ltd.). Can. P. 455 153, Mar. 15, 1949.

In a knitting machine, clutch mechanism comprising 2 members, viz a rotary thrust cam and thrust member, one which is movable axially, a rotary clutch member connected to the axially movable member for axial movement thereby, and a thrust-transmitter displaceable into and out of operative position in which it is interposed in the path of the cam to transmit thrust between the latter and the thrust member and thereby to produce the aforesaid axial movement.

Fabric. Frank J. Ford (33⅓% to Max B. Striar & Harry Whittaker). Can. P. 455 238, Mar. 15, 1949.

A knit fabric comprising warp threads knit together to form a fabric in alternate right and left hand loops, the runs of thread between successive loops in the same warp thread being on a diagonal, transverse filler yarns lying across the fabric and under the diagonal runs only on the face of the fabric, and transverse weft threads knit into the fabric in loops coinciding with the warp thread loops, the warp and weft threads lying completely to one side of the filler yarns except at the diagonal runs of the warp threads.

Knitted fabric. Clarence W. Minton (to Hold Stitch Fabric Machine Co.). Can. P. 453 505, Dec. 23, 1948.

A method of knitting seamless tubular fabric which consists in knitting normally horizontal striped effects in the fabric with an intermediate

contrasting knitted area over a predetermined number of courses, and during the knitting of the latter holding certain stitches in certain wale lines and subsequently knitting the wale lines each of a plurality of tensioned stitches shorter in length than the normal wale line length of the intermediate knitted portion whereby to pucker the latter and draw the stripes in oblique position.

Knitting machine of the links-links type. Henry H. Holmes & Albert H. Widdowson (to Wildt & Co.). Can. P. 455 100, Mar. 15, 1949.

In a knitting machine, in combination, a rotary plain needle cylinder, a superimposed rotary rib needle cylinder, double-ended needles for operation in the cylinders, sliders for operating the needles, means at respectively different locations for effecting transference of needles from one cylinder to the other, a circular series of curved holding down sinkers each furnished with an operating butt and having a lateral projection on one side of its operative end for action upon companion sliders, and sinker cam rings providing between them a track for the butts, the rings being so shaped as to provide in the track, in addition to the usual deviation which moves the sinkers for web holding purposes, a straight portion extending uniformly through the transfer locations in a plane by virtue of which the sinkers are caused to dwell in a position at which they automatically engage those sliders actuated to transfer their needles for the purpose of causing outward deflection of the sliders to liberate them from the associated needles.

Linking, seaming and welting. H. Wignall. *Textile Mfr. 75,* 582-83 (Dec. 1949).

Seaming and welting are operations which can be carried out on the knitting machine and machines have been built which make linking unnecessary.

Machine for producing knitted fabric. Clarence W. Minton (to Hold Stitch Fabric Machine Co.). Can. P. 453 506, Dec. 21, 1948.

In a circular stocking knitting machine having a needle cylinder, a series of needles, a series of jacks therefor, means for dividing the needles into a plurality of recurrent groups, a main yarn feeding station for feeding a yarn to certain of the groups for a predetermined number of successive courses, means for feeding another yarn from the main yarn feeding station to other groups for a predetermined number of successive courses while holding the individual stitches of the first mentioned yarn on the first mentioned

groups of needles which receive the first yarn and floating the second yarn back of the needles holding the stitches of the first yarn, and means for reversing and repeating the cycle of feeding the yarn or yarns to the groups of needles.

Manufacture of full fashioned stockings. H. Wignall. *Textile Mfr. 76,* 58-60 (Feb. 1950).

This is a brief review of the developments which ultimately led to the invention of the straight bar, vertical needle, power operated frame.

Means and method of making knitted fabrics with spread stitches. Harry J. Schmidt & Oscar Dojan. Can. P. 453 352, Dec. 21, 1948.

A method of knitting fabric having spread stitches therein on a machine having bearded needles, sinkers, transfer points and knockover bits, comprising the steps of entering a transfer point in the loop on each of one or more of the needles, lowering the needles to land such loops on the points, moving the needles away from the points, raising the needles to clear such loops off their beards, holding down the fabric by means of the sinkers during all of the foregoing steps, retracting the sinkers and lowering the bit, moving the points laterally over at least one needle space to spread the loops, depressing the needles and points while raising the bits to stretch and support the fabric, advancing the bits to hold a leg of each spread loop against the shank of its needle, lowering the needles and returning the bits to idle position, advancing the sinkers, and raising the needles and points to clear the spread loops off the points and leave them on the needles.

Point straightening mechanism for knitwear looping machines. Jos. T. Jullie (to Strutwear, Inc.). USP 2 498 496, Feb. 21, 1950.

Mechanism for straightening the radially disposed points of a knitwear looping machine, having in combination a base member having means for attachment in a position adjacent a looper dial, an operating arm mounted in the base for reciprocating movement in substantially a vertical plane, the arm having a portion thereof disposed outwardly of and in close relation to the extremities of the points, means for connecting the arm for reciprocation with a source of power, a point-raising element mounted on the arm and extending radially of the rotary dial of the machine and having an extremity shaped to underlie and raise a point in each upward movement of the arm and a point-depressing element mounted on the arm in spaced relation above the point-raising element and extending also radially of the dial and shaped

and positioned to overlie and depress the end of a point in the downward movement of the arm.

Straight bar knitting machine. John E. Lyman (to Wm. Cotton Ltd.). Can. P. 454 979, Mar. 8, 1949.

In a knitting machine, the combination with a member movable to and fro, of a coupling comprising 2 relatively movable parts one of which is connectatable to the member, a friction member for connecting the parts frictionally, and fluid-operated means for operating the friction member.

Tests compare pressed-rivet and screw-rivet needles. Anon. *Textile World 100,* 115, 166, 168 (Jan. 1950).

Tests were run with 15 machines using each type needle for 15 weeks. The conclusions appear to be that less bent latches were found on the pressed rivet needle, less seconds were produced by the pressed rivet needles and at the end of the test period the screw rivet needles showed the most wear. The pressed-rivet needles seemed to be stronger and more flexible at the rivet point.

Tool for removing verge collars on Komet machines. Ernest Bridges. *Textile Industries 114,* 141 (Mar. 1950).

A verge collar puller assembly for easy removal of collars from verge tubes is described and illustrated. The device permits pulling off a collar easily and quickly without damage or abuse to any part.

Yarn supply is critical in knitting worsted jersey. Lawrence Levy. *Textile World 100,* 97, 168, 170 (Jan. 1950).

The worsted yarn must be uniform, free of slubs, have no weak spots, and shed little lint for good knitting. It should be backwound to a soft cone weighing about 3 lbs. and with a tail to allow for double tying. Lint should be cleaned off the top of the cones by hand, when the machine is stopped. Lint should also be cleaned from parts of the machine affected.

Special fabrics C 4

Apparatus for making cemented pile fabric. Paul S. Smith (to C. H. Masland & Sons, Inc.). USP 2 497 330, Feb. 14, 1950.

An improved apparatus for making cemented pile fabric.

Belting fabrics. H. Crawshaw. Brit. P. 586 202, Aug. 2, 1944.

To resist tearing out of the belt fasteners, a belting fabric has, at short intervals, several picks in the same shed, though at the selvedges these picks may be in different sheds. Belting is made by superposing layers of fabric with their multiple picks staggered and applying a substantial coating of rubber or like flexible material. The yarns may be continuous filaments, for example of organic derivations of cellulose stretched in wet steam or other softening agent; if of cellulose acetate or other cellulose ester, they are preferably saponified after stretching.

Compound sheet materials. B. J. Balfe & Imperial Chemical Industries, Ltd. Brit. P. 573 887, Dec. 24, 1943.

An adhesive comprises a water-soluble urea-formaldehyde condensation product in admixture with fish glue, which may be present in the proportion of 2-25% or more by weight of resin solids. Hardening agents such as acids or acid salts may be added shortly before use, or applied to the adhesive coatings. One or both surfaces to be bonded may be treated with a priming composition. Examples describe: (1) the bonding of aluminum sheet to felt with the adhesive containing phosphoric acid, first priming the metal with a composition containing linseed-oil modified glyceryl-phthalate; if desired the felt may be precoated with an emulsion of synthetic resin or a cellulose derivative. (2) The bonding of leather to cotton fabric or to leather with the adhesive containing ammonium chloride, with a precoating as under (1) if desired. The adhesives are also stated to be bonding agents for wood, synthetic resins such as phenol-formaldehyde moldings, woven fabrics, paper and cardboard, plywood, laminated paper, boot and shoe parts.

Double and multiple fabrics. Whittle & Turner, Ltd. & H. Woods. Brit. P. 586 156, Oct. 15, 1943.

A multi-ply cloth has warp threads or weft threads or both of a thermoplastic artificial resin, such as polymerized methacrylate esters, polyvinylchloride, polyvinyl acetate, or other fusible threads, disposed in one outer ply only of the cloth, the other outer ply being entirely free from all fusible threads. In a preferred arrangement the one outer ply has twice as many ordinary warp threads as fusible warp threads. After weaving and finishing treatments such as bleaching and dyeing the fabric may be set by heat, as by calendering, to produce a cloth suitable for collars.

Driving control for axminster looms. Clarence R. Kronoff & Victor F. Sepavich (to Crompton & Knowles Loom Works). Can. P. 454 155, Jan. 18, 1949.

In an axminster loom having tube frame transporting, weft beat-up, tuft cutting, and weft laying mechanism all operated by a shaft forming part of the loom, a gear secured to the shaft, a pinion meshing with the gear, an electric motor operatively connected to the pinion, electric circuit means for the motor including a switch, and shipper bar means longitudinally movably on the loom and operatively connected to the switch and effective in one position thereof to close the switch and cause the electric circuit means to cause running of the motor, the shipper means when in the other position thereof opening the switch to cause the electric circuit means to stop operation of the motor.

Fabric and garment construction. Chas. D. Williamson. Can. P. 453 964, Jan. 11, 1949.

An improved article of manufacture, a woven sheet for fabricating trousers, the sheet having a selvedge, a continuous area of increased wear quality extending parallel to the selvedge comprising a group of yarns having, as a group, comparatively high wearing properties, a relatively narrow area formed of yarns of comparatively low wearing properties between the area of increased wear quality and selvedge, a second, comparatively wide area formed of yarns of relatively low wearing properties at the opposite side of the area of increased wear quality, the relative widths of the areas being such that sections cut lengthwise of the area of increased wear quality with equal widths of material of lesser wear quality at opposite sides thereof will form trouser front panels having the area of increased wear quality extending lengthwise and centrally thereof, and sections cut lengthwise from the remaining portion of the second, wider area of lesser wear quality will form trouser back panels.

Fibrous material. Ernest L. Greenwood, Frederick W. Hughes & Albert W. Morledge-Hadfield (to Camille Dreyfus). Can. P. 455 092, Mar. 8, 1949).

Sheet material which is suitable for use as duplicating stencil tissue, the material comprising a web composed of a mixture of regenerated cellulose staple fibers and staple fibers of a thermoplastic derivative of cellulose, numerous fibers in the web being bonded together, the bonds being provided by the derivative of cellulose.

Looms. T. B. Wilkinson. Brit. P. 583 093, Mar. 20, 1944.

In smallware looms of the single spaced type embodying in each unit an arcuate, gapped shuttle race and a 2-armed spider for throwing the shuttle across the gap, the spider is given a short return movement after a throw to free the gap for the passage of the lay. The spider is oscillated by cam and rack and pinion mechanism from a driving shaft common to each unit. Two work rolls may be provided.

Manufacture of textile fabrics. Daniel R. Shaw (to Camille Dreyfus). Can. P. 454 689, Feb. 15, 1949.

Process for the production of a lightweight textile fabric consisting substantially of wool and having good covering power, which comprises removing the cellulose ester fibers from a textile fabric formed substantially of yarns spun from a mixture of wool fibers and cellulose ester staple fibers containing less than 60% by weight of the wool fibers and which contains per sq. yd. at least 3,000 yards of yarn and less than 3 oz. of wool.

Method of surface-bonding fibrous batts. Camille Dreyfus. USP 2 497 117, Feb. 14, 1950.

A process for preparing batting materials comprising thermoplastic fibers in which only the thermoplastic fibers at the surfaces of the batting material are coalesced.

Non-woven textile fabrics. A. Kershaw. *Textile Mfr. 75*, 559-60 (Dec. 1949).

In this discussion of non-woven fabrics, the special features of "Supatex" are noted. It is claimed that Supatex is a true textile fabric with designed construction, capable of wide variation in selection and blending of fibers, fiber arrangement, type and amount of binder, color and surface finish.

Nylon "fur" for RCAF flying suits. Anon. *Can. Textile J. 67*, 43 (Mar. 3, 1950).

Note: RCAF fighter pilots engaged in Exercise Sweetbriar in the Alaska area are wearing nylon "fur" flying suits and finding them satisfactory. The new fabric, developed by the Defense Research Board at Ottawa in collaboration with textile technicians, is a nylon pile material which has the appearance of white fur. The nylon fur is on each side a waterproof material. The principle involved is one developed over the years by the Eskimos with Caribou skin.

Pile fabrics. Brit. Celanese, Ltd. Brit. P. 587 198, Nov. 8, 1944.

Material having a textile surface and suitable for floor covering and other furnishing purposes comprises strips adhesively secured edgewise to a rigid or flexible backing, the strips being cut from a stack of fabrics containing thermoplastic material. Disc-like sections are cut from a stack of fabrics, containing yarns of cellulose acetate, which has been first rolled up and temporarily wrapped with paper to hold the discs together until they are assembled on a table; the upper surface is then sprayed with acetone and a fabric sheet secured to it by heat and pressure. Alternate discs may be cut from the roll by a heated knife so that each has one face fused to keep the disc intact.

Production of launderable semi-stiff fabrics or articles of wearing apparel. Eric Higgins. Can. P. 454 085, Jan. 18, 1949.

A process for plasticizing composite fabric consisting of both thermoplastic threads or strands of an organic derivative of cellulose such as cellulose acetate and non-thermoplastic threads or strands of a material such as cotton by immersion in an aqueous emulsion of a plasticizer, characterized in that the concentration of the plasticizer emulsion is so chosen as to cause the required amount of plasticizer to be taken up by the non-thermoplastic constituent of the fabric and the amount of plasticizer taken up by the thermoplastic constituent of the fabric is then determined by the time period during which the fabric is immersed in the plasticizer emulsion, whereby any desired ratio between the amount of plasticizer taken up by the non-thermoplastic constituent and the amount of plasticizer taken up by the thermoplastic constituent can be controlled.

Roger Milliken's revolutionary new fabric X. Anon. *Am. Wool Cotton Reptr. 64*, 18-19 (Mar. 9, 1950).

A report is given on the showing of a new fabric development of Deering, Milliken & Co. The development consists of combining metallic particles with natural or synthetic fibers to give warmth without weight to the resultant fabric.

Stiffened cloth. Hermine Goldberg (½ to Ralph D. Goldberg). USP 2 498 077, Feb. 21, 1950.

A stiffened material for belts, brassieres, shoulder pads and collars consisting of a fabric of felted wool fibers provided with rows of stitching extending across the fabric substantially at right angles with respect to each other, the rows of stitching being spaced closely so that adjacent rows of stitches engage the same fibers of the fabric to prevent breakdown of the fibers of the fabric when the stiffened material is laundered.

Textile fabric. Boutwell H. Foster (to Dominion Rubber Co.). Can. P. 455 180, Mar. 15, 1949.

A thin, strong, highly flexible, closely constructed fabric having a gage of about .018" and woven of flat warp and weft strands so that there are about 50 of such strands to the sq. in. and they lie as flat non-twisted ribbons in the fabric, each strand being a compact strong, flat textile strand several hundredths of an inch wide and formed of longitudinally parallel staple textile fibers bonded together without twist solely by a dried organic adhesive.

Textile fabric. Albert Mellor & Ralph J. Mann (to Henry Dreyfus). Can. P. 455 302, Mar. 22, 1949.

Process for the production of a textile fabric capable of having the 2 sides colored in different colors by a dyeing process, which comprises applying to one side of a textile fabric comprising fibers of a cellulose ester a solution of a saponifying agent so thickened that it fails to penetrate through to the opposite side and permitting the saponifying agent to saponify the cellulose ester fibers on the side to which it is applied.

Tools for rug-making. A. A. Blackham. Brit. P. 585 950, May 16, 1944.

A combined loop gage and cutter is provided with an additional bar so that rugs with pile of a greater depth can be made. The bar is temporarily secured to the gage bar by end socket members which telescope over the ends of the bar.

Tufting device. J. W. Johnston. Australian P. 135 792, Apr. 17, 1946.

To apply tufting and candlewick designs to materials a looper is adapted to move in a plane coincident with a flat on the needle to engage and hold the loops through the material when the needle is withdrawn and a stationary blade is adapted to sever the loops while upon the looper.

Woven fabrics; guiding warps. Wingfoot Corp. Brit. P. 574 388, May 25, 1943.

A fabric for incorporation in rubber belting has textile wefts and steel cable warps with or without textile (cotton) warps at the edges. The cables may comprise 3 7-strand plies or 7 3-strand plies, and may be brass plated. The warps may be fed to the loom from a creel, those from the middle of the creel diverging towards the edges of the fabric and those from the edges of the creel converging, so that all the warps undergo the same total change of direction.

Fabric applications C 6

Coated fabrics; compound fabrics. Imperial Chemical Industries. Brit. P. 574 173, Jan. 7, 1944.

Fabrics are coated or laminated with a composition comprising a vinyl chloride-vinyl acetate copolymer plasticized by an alkyl ether alcohol ester of an aliphatic dicarboxylic acid having 4 to 9 C atoms in the straight chain.

Laminated electrical insulation material. Kenneth N. Mathes (to Can. Gen. Electric Co., Ltd.). Can. P. 452 972, Nov. 30, 1948.

The method of making a laminated electrical insulation panel having a dielectric strength of at least 60 volts per mil and a 2000 lb. high-shock test of at least 5 lbs., which method comprises (1) forming a core of laminations of sheets of cloth impregnated and coated with a thermosetting phenolic resin, (2) applying to both sides of the core face sheets of asbestos sheet material coated and impregnated with an ortho-phosphoric acid compound decomposable under heat in the presence of asbestos to orthophosphoric acid, and (3) molding the assembly obtained in (2) under pressure and at a temperature of from about 125° to 165°C to unite the laminatons of the core to each other and to the face sheets.

Pad for ironer rolls. Harry O. Mamaux (to Pittsburgh Waterproof Co.). USP 2 498 499, Feb. 21, 1950.

An ironing roll pad adapted to be wrapped around an ironer roll and having roves therein which, at the longitudinal mid zone of the pad, are in more closely-spaced relation to one another than near the edges of the pad, weft threads holding the roves in assembled relation, and a relatively smooth facing fabric unitarily connected with the weft threads and the roves.

Process for making flexible protective shields. Louis J. Strobino (½ to Liberty Dressing Co., Inc.). Can. P. 454 440, Feb. 1, 1949.

A process for making a flexible shield for protection against attack by destructive penetrating rays such as x-rays and the like, which process includes the steps of providing a flexible fibrous and porous sheet of a substance normally permeable to the destructive rays, a body of water which has the property of readily penetrating the pores in the sheet, and a quantity of solid lead particles in fineness of the order of at least 300 mesh, dispersing the lead particles in the body of water to provide a concentrated suspension of lead particles suspended in water, thereafter tumbling the

sheet in a volume of the suspension exceeding that which the sheet can absorb, thus causing the suspension of water and lead particles to thoroughly permeate the porous sheets so that the lead particles are physically entangled within and throughout the interfibrous pores of the sheet, and thereafter removing the water from the sheet thereby leaving the lead particles physically entangled within and throughout the thickness of the sheet.

Woven fabrics. Angus & Co., Ltd. & D. E. F. Canney. Brit. P. 586 409, Jan. 3, 1945.

A ribbed stair tread is formed of a strip of textile fabric impregnated with a thermosetting synthetic resin. The ribs are formed in a double cloth by groups of crammed warps and are accentuated by tensioning the binder warps in such a way that they pull the 2 cloths together more tightly between the ribs.

STANDARD FINISHING D

Automatic instruments control Ware Shoals bleaching. Jas. M. Bennett. *Textile World 100,* 94-6 (Jan. 1950).

High efficiency and good uniformity are the results of properly engineered instrumentation and automatic controls on the continuous bleaching range. Electronic speed recorders to aid manual control of cloth speed, electronic potentiometer with pneumatic control action for automatic temperature control of the saturating bath, and Electronik temperature controller connected to a thermo-couple to control the steam level in the J-box, are examples of the instruments used. The application of these and other controls such as those on the washers are described.

Bleaching of cotton cloth. C. F. Fitton. *Can. Textile J. 67,* 50-1 52, 55-56 (Feb. 17, 1950).

This is a review giving practical information on desizing speeds, the caustic scour, the control of pH values and other topics of importance to the dyer and finisher.

Bleaching of rayon. C. E. Coke. *Can. Textile J. 67,* 56, 58, 60 (Feb. 17, 1950).

This is a review of the bleaching of rayon. The most popular bleaching agents used with rayon goods in Canada are sodium hypochlorite and hydrogen peroxide. The importance of temperature control, pH, and concentration is stressed.

Decating machine and method. Geo. Haeberlin (to Richmond Piece Dye Works, Inc.). USP 2 494 808, Jan. 17, 1950.

In a decating machine of the blanket and endless carrier type having means defining a steaming zone along the path of travel of the blanket and means for drawing steam from the zone through a web of textile material continuously transported by and between the carrier and blanket, the improvement in steam supplying means for the zone comprising steam nozzle-orifice means at and substantially across the blanket exit end of the zone and positioned for steam ejection into the zone counter the direction of blanket travel and substantially at an angle away from the blanket and means for passing steam to the orifice.

Detergents and detergency. Foster Dee Snell. *Chemistry & Industry,* 539-45 (July 30, 1949); *Chem. Eng. News 27,* 2256-62, 2301 (Aug. 8, 1949).

Detergency is difficult to describe because of the wide variation in surfaces and soils encountered, and because of the complex combination of effects involved. It generally deals with physical forces, rather than the stronger chemical forces, and with colloidal effects such as emulsification, suspension, and deflocculation of small particles and thin films. Detergents may be anionic, cationic, or non-ionic, the last group offering the greatest range of properties. Detergency is frequently measured by the increase in reflectance of standard soiled cloth samples washed in the Launderometer, but results of such measurements are hard to duplicate. A more promising approach to specification of detergent power is correlation with precisely measurable physical properties. Of these, important ones are pH, surface tension of detergent solutions, interfacial tension against oils, dispersing power for suspended soil, soil solubility in detergent micelles, sorption of detergents on surfaces to be cleaned, and possibly others. Builders of various types, both simple inorganic salts and polyvalent negative ions like molecularly dehydrated phosphates and sodium carboxymethylcellulose, are economically important, especially with the newer synthetic detergents. Other additives, such as fluorescent whitening agents, are also factors in detergency.

Development of the new fluorescent whites. Anon. *Silk & Rayon 24,* 246, 249 (Feb. 1950).

This is a brief review of the development of the "fluorescent" or "optical" bleaching agents. The formulas of several of these substances are given and their chemical properties noted. At the present time practically all types of textile fibers can be given a much better white appearance by fluo-

rescent bleaching than is possible by simple bleaching treatments alone. Recently fluorescent substances have been discovered capable of being substantially absorbed by wool and silk. For these fibers the fluorescent whitening products can be applied in much the same way as an acid wool dye, that is, from a hot bath containing a small proportion of acetic or sulfuric acid to promote exhaustion.

Finishing jute fabrics—XI. S. A. G. Caldwell. *Fibres 10,* 233-35 (July 1949).

The practical aspects of finishing jute fabrics are discussed. Various finishing operations such as cropping or shearing, damping, calendering and chesting, measuring, mangling, crisping, and lapping are each discussed. Also emphasized is the importance and efficiency of jute finishing machinery and processes so as to extend the range, variety, and quality of jute products to bring them into competition with linen and cotton fabrics. See also TTT: *6,* 675.

Fundamentals of detergency. F. C. Harwood. *Fibres 11,* 9-11 (Jan. 1950).

Detergency is discussed from a practical standpoint. The 2 important properties of detergents are cited—good wetting characteristics and ability to emulsify and hold dirt in suspension. The mechanism of detergent action is discussed; the factors investigated include surface tension, interfacial tension, contact angles, rate of penetration, adsorption, suspending power and pH values of the detergent solution. These factors are discussed in turn.

Method of decating fabrics. Wilfred N. Hadley (to Parks & Woolson Machine Co.). USP 2 498 416, Feb. 21, 1950.

A method of decating textile fabrics, which consists in wrapping an open strip of fabric in flat and direct overlapping relation on and about a foraminous cylindrical surface to form a cylindrical fabric body of substantial diameter and length on the cylindrical surface, enclosing and highly compressing the body uniformly and continuously at and throughout its outer cylindrical surface by continuous pressure contact of a smooth, cylindrical and unyielding foraminous surface with the outer cylindrical surface, and forcing decating fluid under high pressure radially through the foraminous surfaces and the cylindrical fabric body while holding the body highly compressed radially and uniformly by and between the foramious surfaces.

Milling: choice of media and machine adjustments. G. L. Atkinson. *Textile Mfr. 76,* 89-90 (Feb. 1950).

Tests of 4 milling periods on standard patterns showed that in the first period the highest felting with each weave was with soda soap, and that if rapid shrinking and felting are required, the soda soap is preferable.

Nature of soil to be deterged and its bonding to the surface. Foster D. Snell, Cornelia T. Snell & Irving Reich. *J. Am. Oil Chemists' Soc. 27,* 62-8 (Feb. 1950).

A soil is ordinarily composed of varying amounts of oil, wax, or grease; solid particles of diverse types; and special water-soluble or water-dispersible materials such as sugar, salts, starch, etc. Soil is retained on fabrics by mechanical forces, chemical forces, electrostatic attraction, and oil-bonding. Much remains to be done in the way of studying soils and the methods by which they attach to fabrics, fibers and other bases.

Occurrence of soluble wool-substance as a result of the sulfuric acid carbonizing process. Jackson Bauer. *Am. Dyestuff Reptr. 39,* P122-28 (Feb. 20, 1950).

When wool contains sufficient vegetable matter to require carbonizing, the loss of yield in processing may be of such magnitude as to become an economic problem. Laboratory investigations are described which provide data which offer a clue to reducing significant losses of soluble wool substance. The mechanism involved in the loss of wool may probably be explained in terms of acid hydrolysis of wool protein. Part of the wool is rendered soluble as its peptide bonds are hydrolyzed. Careful control of operating conditions is necessary if wool damage is to be minimized. Proper manufacturing facilities are also necessary if effective carbonization of vegetable matter is to be accomplished while minimizing the wool loss.

Optical bleaches. Anon. *Textil-Praxis 4,* 31-2 (Jan. 1949); *in German.*

Optical bleaches are colorless dyes which convert ultra-violet into visible light, thus brightening the fibers. Optical bleaching can be used as a complementary process where extended chemical bleaching creates difficulties. The application of optical bleaching is limited as the dyes have no cleaning action; the brightening effect is dependent on the source of light. By reducing the amount of chemical bleaching savings in chemicals are obtained

and the wear on fibers is reduced. The "Uvitex" bleaches are discussed.

Properties of optical bleaches. Carl Teichgraber. *Can. Textile J. 67,* 49-50 (Feb. 17, 1950).

This is a brief, general discussion of optical bleaches and their application to all types of textiles.

Synthetic detergents. A. Lawrence Waddams. *Chemistry & Industry,* 783-88 (Nov. 12, 1949).

In the U.K., synthetic detergent usage is as yet smaller than in the U.S., and a larger proportion is in the domestic field. Synthetic detergents are naturally preferred for silks and woolens because of their hard-water performance, while building with soda ash, phosphates, and especially sodium carboxymethylcellulose has improved their acceptance for linens and even heavily soiled cottons. The textile and laundry industries are large industrial users. Wool scouring and backwashing, piece goods scouring, silk degumming, rayon scouring, kier boiling of cotton, and "soaping off" illustrate leading applications. Laundering of fine fabrics with mild synthetic detergents and of cottons with built compounds, as well as salt-water laundering, is becoming common. Secondary alkyl sulfates are most widely employed (American practice favors alkyl aryl sulfonates), with primary alkyl sulfates finding specialty uses and non-ionics becoming increasingly important. The low cost of petroleum as a raw matreial scource leads to the wide use of secondary alkyl sulfates and promises more production of alkyl aryl sulfonates.

Synthetic detergents vs. soap for industrial purposes. I—Synthetics as superior industrial cleaners. John W. McCutcheon. **II—Soap as a superior industrial cleaner.** Foster Dee Snell. *Soap & Sanitary Chemicals 26,* 44-6, 87, 147 (Feb. 1950).

This is a discussion, in the form of a debate, of the respective merits of synthetic detergents and soap as cleaners for industrial purposes.

Technique of mercerization; a new wetting agent —Servirol Q.M.S. S. N. Rao. *Indian Textile J. 60,* 263, 270 (Dec. 1949).

A brief history and discussion of theory of mercerization are given. The 6 factors considered necessary to achieve optimum conditions of mercerization are listed. These include: 1) concentration of alkali, 2) tension, 3) temperature of treatment, 4) time of treatment, 5) impurities in the caustic liquor, and 6) previous treatment of the fibers. Data are presented to show the efficiency of the wetting agent Servirol Q.M.S.

Thread tension as it affects scouring and dyeing in jiggers. A. J. Hall. *Fibres 11,* 5-7 (Jan. 1950).

The jig, which is one of the most useful machines for dyeing and scouring, has certain limitations in that tension must be used during processing. This tension not only restricts liquor penetration during scouring but also during dyeing, especially when using vat or azoic dyes. In addition, tension also restricts to some extent the amount of liquor the fabric can hold. A third effect is mangling caused by the pressure between the layers of fabric so that the liquor brought out of the dye liquor by the fabric is steadily squeezed out.

Variations in scouring and milling. B. F. J. Moxon. *Fibres 11,* 15-16 (Jan. 1950).

A survey conducted by the Wool Industries Research Association showed that 6 different types of scouring machines are in general use with 77.5% being of the dolly type. Two general types of milling machines, flanged, and non-flanged roller types, were also found in use with woolen firms preferring the former, and worsted firms the latter. Also discussed are alkali scouring and wash-off times, and it is shown that throughout the trade extreme variations in the manner of carrying out these processes exist. An example is cited showing that wash-off times range from 10-270 minutes.

Wool bleaching problems. E. G. Drake. *Can. Textile J. 67,* 62, 65-66 (Feb. 17, 1950).

Preparation of the fabric, the various compounds and their uses, stabilizers and their uses, and bleaching procedures which assure satisfactory results are reviewed.

Wool textile drying processes. W. W. Spooner. *Dyer 102,* 441-44 (Oct. 21, 1949).

This is a report of a paper presented at the Wool Textile Fuel Efficiency Conference, held at Huddersfield, Sept. 20-1, 1949. The use of high temperatures in drying machines is recommended for the following reasons: 1) cheaper drying is obtained, for the higher temperature the higher the evaporation; 2) a high temperature drying machine takes up less space because of high evaporation; 3) a high temperature drying machine requires less power for the fans; 4) steam evaporated off the material can be used for process work in the larger machines. The principles of high temperature drying are discussed and meth-

ods of increasing efficiency of steam utilization are described.

DYEING AND PRINTING E

Coloring of glass fibers. W. Garner. *Brit. Rayon & Silk J. 26,* 73-5, 82 (Jan. 1950).

Coloring can be for identification or decoration, or the fabric may later be made mildew or rot-proof. It must either be colored before being spun or by a superficial coating on the fiber.

Metal oxide coloring of molten glass, surface coloration by treating fibers with metallic salts and then tinting, dyeing with basic dyestuff in concentrated solutions, and direct dyeing with sulfur or vat dyestuffs, are discussed briefly. The coating of fibers with drying oils, cellulose esters, cellulose ethers, rubber, proteins, urea-formaldehyde resins, melamine-formaldehyde resins, and vitrofiable enamels are described briefly.

Continuous wet steam process for indanthrene dyes. W. Dietrich. *Textil-Praxis 4,* 333-35 (July 1949); 393-95 (Aug. 1949); *in German.*

The duPont steam process is described and illustrated. The construction and operation of the Williams unit is also described and the efficiency of the 2 systems is compared. The use of blank vats and vat-acid is considered in detail. Both systems require auxiliary equipment. The Williams system is considered uneconomical for small quantities, but is preferable for larger quantities. The chemistry of indanthrene dyeing is discussed.

Dyeing of Ardil. Anon. *Brit. Rayon & Silk J. 26,* 50 (Feb. 1950).

This is a report on a talk by R. W. Speke. Ardil, not yet in commercial production, is a synthetic protein fiber and will likely be used in blends with wool. Factors which affect the choice of dyestuff to use on Ardil are: 1) ability to absorb and desorb dyes rapidly; 2) it has a high alkali binding capacity, and therefore pH must be carefull controlled; 3) free formaldehyde is liberated above 80°C; and 4) inferior wet strength of Ardil. Methods of application are discussed.

Different phases of naphthol dyeing. Bert Celentano. *Am. Dyestuff Reptr. 39,* 117-19 (Feb. 20, 1950).

See "Dyeing with naphthol colors," TTD:7, 136.

Dyeing and finishing nylon flat goods. Frederick A. Alter. *Textile Age 14,* 68, 70-2 (Feb. 1950).

The latest techniques, processes, and chemicals used in scouring, bleaching and dyeing flat nylon materials and blends are discussed.

Fixation of pigments on textile materials. Henry C. Olpin, Philip B. Law & Sydney A. Gibson (to Camille Dreyfus). Can. P. 455 422, Mar. 22, 1949.

Process for the production of pattern effects on textile fabrics, which comprises locally applying a composition containing a pigment and a water-soluble condensation product of formaldehyde with a substitution product of biguanide and thereafter insolubilizing the condensation product by heating.

Dyeing of Perlon U. E. Köster. *Textil-Praxis 4,* 390-2 (Aug. 1949); *in German.*

The chemistry of polyurethane fibers (Perlon U) is reviewed briefly. Dyes suitable for dyeing Perlon U are discussed; dyes best suited are the dispersed insoluble acetate rayon dyes, Celliton and Cellitonecht. The colors obtainable are given with values of fastness to light, water, washing, perspiration and abrasion. Acid wool dyes, for which fastness values are also tabulated, are noted. Chrome after-treatment and vat-dyes are mentioned briefly.

Dyeing of rayon staple fabrics. A. W. Bakker. *Enka ne Breda Rayon Revue 3,* 8-15 (1949); *in Dutch.*

The dyeing of rayon staple fabrics is discussed with reference to pretreatments, dyeing on the winch, the padding machine, and the jig with different types of dyes.

Getting the color off. A. G. Tyler. *Dyer 103,* 23-25, 27 (Jan. 13, 1950).

This is a discussion of the methods and reagents used in stripping. Other factors considered are the fiber, class of dyestuff, and condition of material.

Hank dyeing rayon and rayon staple with sulfur dyes. Karl Wojatschek. *Textil-Praxis 4,* 402-03 (Aug. 1949); *in German.*

Sulfur dyeings on viscose and cuprammonium rayon are characterized by high fastness to light, washing, abrasion and particularly to cross-dyeing. Sulfur dyes and dyeing practices are discussed. Rayon staple must be cleaned before hank dyeing; several cleaning agents are noted, as are bath concentration, temperature and drying. The dyeing of each lot should be planned individually.

High speed dyeing. Anon. *Brit. Rayon & Silk J. 26,* 62-3 (Jan. 1950); **Photochemical process vat dyes fabrics continuously.** Anon. *Textile World 100,* 99 (Jan. 1950).

The Vat-Craft Corp. has introduced a process of dyeing making use of uranium acetate and a sensitizing agent containing uranium, in conjunction with mercury arc lamps to cause a solution, including dyestuff, to impregnate cloth faster than has heretofore been possible. It is suitable for Orlon, nylon, acetate rayon, and other fibers. Fibers are coated with soluble materials that are later converted to insoluble pigments. The machine has 4 basic units: 1) pad dye machine, where the dye solution, containing the radioactive catalytic agent is applied: 2) quetsch number one, where photo-sensitizing solution is applied; 3) development chamber, which contains 30 lights of 3,750 watts each; the color is set when the material leaves this machine; 4) quetsch number two, with a fresh water bath. Cloth is handled at the rate of 120 yards per minute.

Identifying textile fibers for dyeing. E. A. W. Boyce. *Can. Textile J. 67*, 60-1 (Mar. 3, 1950).

Data are presented on visual, burning, chemical and stain tests used in the identification of textile fibers prior to dyeing.

Influence of various factors on the photochemical degradation of dyes. J. Pinte & J. Millet. *Teintex 14*, 21-33 (1949); *in French.*

This is a review, based on 50 references, of the degradation of dyes by light. The subject is discussed under the following headings: degradation of dyes by oxidizing action; combined action of dye and supporting medium in the phenomenon of degradation; and specific action of spectral radiations on color.

Merits of the metallized dyestuffs. H. Luttringhaus. *Am. Dyestuff Reptr. 39*, 152-54, 156 (Mar. 6, 1950).

See TTD: 7, 138.

MODERN TEXTILE DESIGN AND PRODUCTION. R. H. Wright. London, Natl. Trade Press, Ltd., 1949. 170 p. Price: 42s.

The author of this excellent book is the principal of Portland Designs, Ltd., Manchester, and has had a unique experience as industrial designer and consultant. Trained in the days of Myers, Brooks, Miss Dust, and others at the College of Technology, he possesses that unique combination of artistic with commercial and practical textile ability . . . Sections are devoted to fundamental principles, to rayon and rayon staple, weave and color effects and color from cross-dyed effects. Colorings, design styles, studio practice and technique from the working drawing up to the final result in cloth, the remarkable revival in squares, scarfs and handkerchiefs, all receive due treatment. Great importance is placed by the author on fabric dyeing, printing and finishing, and colored designs, but perhaps not enough to the preliminary preparation of fabric for the actual finishing. In the next edition, also some notes on historical background could find a place even in a modern treatise. Those are the only minor points of criticism for an otherwise most praiseworthy effort . . .—*Textile Weekly.*

Natural Indian dyes and the art of their application. A. N. Gulati. *Indian Textile J. 60*, 223-29 (Dec. 1949).

A brief history of dyeing in ancient times is presented. The author then lists approximately 120 plants from which dyes are obtained. This information is broken down into 4 main headings which include plant (botanical name) commercial name, part employed, and color produced.

Notes on vat color printing. Anon. *Textile Mfr. 76*, 86-8 (Feb. 1950).

In the preparation of print pastes it is important to observe discrimination in the matter of the additions of solvents, lubricants, anti-frothing agents, etc. In no circumstances should these be added to the stock thickening. Included in the discussion are: vat pastes and powders, alkalies, reducing agents, hygroscopic agents, solvents, etc., print color notes, and pre-ageing conditions.

Patterned fabric. Frederick G. Dodge (to Camille Dreyfus). Can. P. 454 058, Jan. 11, 1949.

Process for the production of patterned fabrics, consisting of the step of passing one side of an untensioned fabric containing yarns or filaments of a thermoplastic material having a basis of cellulose acetate in contact with a smooth surface lubricated with a polymeric methyl silicone and maintained at a temperature sufficiently high to effect at least a softening of the thermoplastic material, the temperature being at least 250°C.

Perlon dyeing. G. Früh. *Textil-Praxis 4*, 404-06 (Aug. 1949); 462-64 (Sept. 1949); *in German.*

The properties of Perlon are reviewed and the handling and preparation of Perlon articles before dyeing are discussed. A flame test and the reaction of Perlon with chromic acid are given as acids in identification. Dyeing procedure and a number of dyes are described, their fastness compared and auxiliaries noted. Mixture of Perlon and animal and vegetable fibers are also considered.

Photochemical development of dyes. Leonard E. Ravich. *Textile Industries 114,* 121, 123 (Mar. 1950).

In an abstract of a paper presented at a meeting of the New York section of the AATCC, technical information is given on the use of optical and radioactive source material sensitizers in the photochemical development of dyes.

Printed silk fabrics. F. F. Jacobs. *Am. Dyestuff Reptr. 39,* 155-56 (Mar. 6, 1950).

Difficulties encountered in producing printed silk fabrics of good fastness properties are discussed and suggestions are given for producing prints of all-round fatsness properties. Color types suitable for all-round purposes, selected as the result of tests, are given in a table.

Process for coloration of textiles and paper with dyestuffs containing quaternary or ternary salt groups. Imperial Chemical Industries, Ltd. Indian P. 39 886 (through *J. Sci. Ind. Research (India)*).

Printing textile or paper with dyestuff containing quaternary ammonium, ternary sulfonium or isothiouronium salt group.

Relationship between the chemical constitution of vat dyes and their dyeing and fastness behavior. M. R. Fox. *J. Soc. Dyers Colourists 65,* 508-31 (Nov. 1949).

An outline is given of the developments in vat dyeing techniques over the past 25 years and an attempt is made to correlate the effects of the chemical constitution of vat dyes on dyeing and fastness properties. Present conceptions of the mechanism of vat dyeing are described and 117 vat dye are arranged in 5 chemical classes. The hue characteristics and dyeing and fastness properties of each group are then described. The dyeing properties of the vats are reviewed next and some general rules are found to exist with respect to dye bath assistant requirements as well as for migration powers. Finally, a simple test for the determination of the tendering powers of vat dyes on cellulose and exposure to light is discussed.

Rotary silk screen printing. A. J. C. de Oliveira Barros. Australian P. 135 796, Dec. 24, 1946.

To combine the advantages of the silk screen process with the rapidity and ease of operation of rotary printing, a process of printing continuously on fabrics, paper or the like material comprises a screen formed to substantially cylindrical shape and permeable to the printing fluid to be used, the pattern to be printed being defined by an impermeable substance applied to the portions of the screen which is adapted to be rotated in contact with the material to be printed. The printing fluid is applied to the inner surface of the screen and fed through the permeable portions thereof to the material.

Screen frames and silk-stretching. F. W. Mackenzie. *Dyer 102,* 560-62 (Nov. 18, 1949).

The construction of several different types of screen frames is discussed and their advantages and disadvantages noted. Included in this discussion are: laminate frames, metal frames, Hiduminium frames; silk-stretching, the auxiliary frame method, double-frame method, the end roller, channel and fillet, and gauze tensioning table.

SCREEN PRINTING. W. Taussig. Manchester, England, Clayton Aniline Co. Ltd. [n.d.]. 81 p.

. . . The original book was criticized because it contained no illustrations. The publishers have now handsomely made up for that failing. There are numerous black and white sketches throughout the text (with color added in some cases to clarify certain points) and at the end there are over a score of photographs. The sketches are clearly drawn and will be very helpful to the newcomer in screen printing, but even the expert can learn from them. The photographs, especially those of the fully automatic screen printing machine, are of great interest. This machine, only in an experimental stage before the war, seems gradually becoming a commercial proposition. This is a matter of such importance to the screen printer that he will regret that only photographs and a passing reference in the text are given, but no explanatory notes about the working and performance of the apparatus. The text has also been extended. Examples of printing recipes have been included and new developments, for example, in screen making and in the fastening of pieces to the tables, are reviewed. In the chapter dealing with azoic colors, however, the neutral steam method (Developer N process) is not mentioned although it would be of special interest to the screen printer . . .—*Dyer.*

Solid shades on wool/jute unions. Anon. *Dyer 102,* 195-96 (Aug. 26, 1949).

Methods of dyeing wool and jute union yarns and piece goods are reviewed. Wool and jute union yarn, in the form of hanks, to be dyed with chrome dyestuffs, requires degreasing, and, in some cases, scouring before dyeing. In some instances wood dyestuffs, e.g., logwood extract, fustic extract, and rasped camwood are still used. Wool and jute un-

ion piece goods are, in the majority of cases, colored by a combination of neutral acid colors and direct cotton colors.

Theories of cellulose dyeing. I-III. *Dyer 101,* 721-22 (July 1, 1949); *102,* 137-38 (Aug. 12, 1949); 317-18 (Sept. 23, 1949).

This survey of cellulose dyeing was written especially for those interested in the subject but who lack the highly specialized background that is necessary for the understanding of the more highly scientific papers appearing in the literature.

Uranium complex in dyeing. Leonard Ravich. *Am. Wool Cotton Reptr. 64,* 13 (Jan. 26, 1950).

The use of a uranium complex in photochemical dyeing and the Vat-craft machine are discussed.

Washing and soaping of printed material. Anon. Indian P. 41 361 (through *J. Sci. Ind. Research (India)*).

Overflow from the last cistern is fed to the succeeding water cistern and the overflow from the succeeding is fed to the next and so on, whereby a counter-current is developed within the cistern.

SPECIAL FINISHING F

Anti-shrinking treatment of animal fibers. John L. Raynes & Francis M. Stevenson (to Stevenson (Dyers) Ltd.). Can. P. 453 043, Nov. 30, 1948.

A method of treating fabrics and other textile materials consisting at least in part of wool, to reduce the natural tendency to shrink when washed in aqueous liquors, comprising treating such materials with a dilute aqueous solution of an alkali metal permanganate at a pH of not less than about 5 and with a dilute aqueous solution containing a substance selected from the group consisting of alkali hypohalite at a pH of at least 7.5 and a nitrogen-chloro compound in which the chlorine atom is directly attached to the nitrogen atom and in which the chlorine is present as available chlorine having a pH of about 1 to 3.

Application of chemistry to textile finishing. E. Wilson. *J. Soc. Dyers Colourists 65,* 497-507 (Nov. 1949).

This paper discusses textile finishing from the standpoint of rendering textiles suitable for certain end uses. This special processing is described under 3 separate headings as follows: 1) enhancement—filling, organdie finishes, luster, crease-resistance; 2) proofing—shower, mildew, moth, and flame; 3) serviceability—dimensional stability, improved fastness to washing and storage, resistance against fiber slippage, and improved wear-resistance. Under each of the major breakdowns the chemicals and the methods used for achieving the desired properties are discussed in detail.

Applications of rubber to wool—III. R. W. Moncrieff. *Textile Mfr. 76,* 82-5 (Feb. 1950).

This article, the last of the series, discusses the use of butadiene-styrene co-polymers, butadiene and methyl butadiene, and chloroprenevinyl compound co-polymers, etc. For Parts I and II see TTD: *7,* 226.

Cloth shrinkage in garment production. I. Causes of shrinkage. *Wool Science Rev.,* No. 4, 25-34 (Nov. 1949).

This is a brief review of the causes of shrinkage in woolen cloth, with particular reference to the effect of manufacturing and finishing processes which produce srhinkage.

Coated fabrics. J. H. McGill & Imperial Chemical Industries, Ltd. Brit. P. 573 842, Apr. 10, 1942.

Fabric or paper is coated by calendering on it at a raised temperature a gelatinized composition comprising (a) polyvinyl chloride, (b) polymethyl methacrylate and (c) a liquid plasticizer the proportion of (b) to (a) and the proportion of (c) to (a) and (b) and (c) both being such as to yield a strong non-tacky product and to permit the composition to be rolled at a temperature, e.g., 210-240°F, at which no substantial volatilization of the plasticizer occurs. Suitable plasticizers are tricresyl phosphate and dibutyl or diheptyl phthalate. The proportion of polymethyl methacrylate may be 2½-25% by weight of the polyvinyl chloride and the plasticizer comprises 25-55% of the weight of the composition. The polymethyl methacrylate may be dissolved at a raised temperature in the plasticizer and the solution hot-mixed with the finely divided polyvinyl chloride. Pigments, dyestuffs and fillers may be added. Surface brilliance may be imparted to the coating by fusing the surface without using pressure, e.g., by radiant heat.

Coated fabrics; compound sheet materials. Imperial Chemical Industries, Ltd. Brit. P. 573 932, Aug. 7, 1942.

Active hydrogen-containing polymeric materials are bonded to the surfaces of articles, e.g., fabrics, films, sheets, or tubes made of a different active hydrogen-containing polymeric material

by bringing the 2 polymeric materials together in the presence of a polyisocyanate or polyisothiocyanate or mixture thereof. The bonding may be carried out by coating or spraying the article with a solution of the polyisocyanate in toluene, flashing off the toluene and applying the other polymeric material and bonding by heat and pressure.

Coated paper and fabrics. A. Sommer. Brit. P. 573 935, Jan. 21, 1943.

Pulverulent plastic compositions are prepared by dispersing in air, etc., particles of a binder, e.g., resin or synthetic resin, asphalt, coal tar, or pitch at a temperature at which it is liquid, and causing cooler solid particles to collide with and adhere to the surfaces of the binder particles, the product being thus non-adhesive, but convertible by heat or solvent action so that the binder wets and covers the solid particles. The corpuscles thus formed may be kept apart by a liquid immiscible with the binder, e.g., by water which may be later taken up by adding Portland cement. The corpuscles may be agglomerated and used for molding, building, roads, joints or may be applied to felt, fabrics, cardboard, or paper, etc. The solid particles, 80% of which have diameters not greater than 74 microns, comprise, e.g., powdered slate, carbon, calcium, carbonate, talcum, kaolin, zinc oxide, pigments, ground scrap rubber, lignin, cork flour, wood flour, asbestos fines or cotton, wool, cellulose, or synthetic fibers.

Coating of fabrics. Geo. W. Flanagan (to The B. F. Goodrich Co.). Can. P. 450 894, Aug. 31, 1948.

In the process of coating a textile fabric with plasticized vinyl resin, the improvement which consists in applying the vinyl resin coating to the fabric in 2 stages, the first stage consisting in coating the fabric with an aqueous dispersion of a vinyl resin in which the dispersed phase consists of a plasticized copolymer of vinyl chloride and methyl acrylate, removing the water from the coating and heating the coating at 100 to 250°C until it forms a coherent integument, and the second stage consisting in coating the fabric bearing the coating applied in the first stage with a solution of γ-polyvinyl chloride in a volatile solvent and then removing the solvent, whereby to obtain a coated fabric characterized in that the coating is tightly adhered to the fabric, is highly impervious to water and is highly resistant to abrasion, the coating being superior, because of these properties, to coated fabrics produced by applying the coating by either the first stage or the second stage alone.

Commercial application of flame-resistant finishes. R. W. Little, J. M. Church & S. Coppick. *Ind. Eng. Chem. 42*, 432-40 (Mar. 1950).

Flame retardents for application to textile fabrics may be subdivided into water-soluble salts and durable finishes, capable of resisting wet- and dry-cleaning operations. The 2 principle groups of water-soluble salts and mixtures are: those capable of forming thermostable foams at flame temperatures, and the thermoliable inorganic and organic salts of the mineral acids. Durable flame-resistant finishes may be classified as double-bath treatments, dispersions of the emulsion or solvent suspension type, and the modified cellulose processes wherein reaction with the cellulose molecule is obtained.

Crease resistant and water repellant finishes. Anon. *Textile Mfr. 75*, 574-76 (Dec. 1949).

This is a discussion of the Spooner range of machines which are available for applying and setting resins, and in which the cloth passes through all machines automatically and continuously. Only 3 operators are required.

Durably flame-retarding cellulosic materials. Hugh C. Gulledge & Geo. R. Seidel. *Ind. Eng. Chem. 42*, 440-44 (Mar. 1950).

This paper describes a new method for durably flame-retarding cellulosic materials such as cotton and viscose. The chemical employed is based on an aqueous titanium-antimony complex known as Erifon flame retardant which, after a 2-step process, appears to combine chemically with the cellulose molecule. Methods and problems of application and properties of a variety of treated fabrics are discussed, and the limitations as to durability, dyeing, and fields of application are pointed out.

Fire resistant fabric material. Clarence B. White. Can. P. 454 375, Feb. 1, 1949.

The method of producing a fire resistant textile fabric comprising impregnating a fabric with sodium carbonate solution, drying the fabric, impregnating the dried fabric with a solution of antimony trichloride in an organic solvent, the presence of residual sodium carbonate in the fabric preventing any hydrochloric acid resulting from hydrolysis of the antimony trichloride from attacking the fabric, drying the thus impregnated fabric, passing the fabric through a warm solution of sodium carbonate thereby precipitating insoluble antimony trioxide throughout the interstices of the fabric, washing the fabric with water to remove residual sodium carbonate, drying the fabric, thereafter passing the fabric

through a solution of chlorinated paraffin and then drying the fabric.

Fire-retardant textiles from a consumer standpoint. Kenneth H. Barnard. *Ind. Eng. Chem. 42,* 430 32 (Mar. 1950).

The properties of flame-retardant textiles are discussed with particular reference to the following: dermatitis, tensile strength, drape and hand, tearing resistance, comfort factor, effect on colors, and effect on useful life.

Laundry resistant antimildew treatment. Samuel Lee. *Am. Dyestuff Reptr. 39,* 145-51, 156 (Mar. 6, 1950).

A method is presented for increasing the permanence of antimildew and antirot properties of textiles. A water-insoluble fungicide, such as copper-8-quinolinolate, is affixed to the textile fiber by resin-bonding. Gradual loss of protective agent occurs upon repeated laundering, but even after 25 launderings resistance to microorganisms is still far superior to that of the untreated fabric. Resistance to dry cleaning and to alternate exposures to ultraviolet light and washing is also high. This treatment appears suitable for both vegetable fibers and animal fibers.

A literature survey on waterproofing and water-repellency of textiles. Prepared by Francis D. Horigan & Cary R. Sage. (Bibliographic Series No. 2.) Philadelphia, QM Research & Development Laboratories, 1947. 81 p. (Available through U. S. Dept. of Commerce, Office of Technical Services, Washington 25, D. C. Order PB 98 016 (mimeo) $1.75.

——— Supplement No. 1 (Bibliographic Series No. 8) 1949. 31 p. PB 98 016s (Mimeo $1.00).

The present bibliography comprises a survey of the journal and patent literature in this field for the period 1937-47. 1937 is chosen as the break off period as it was in this year that durable water-repellents were first introduced. Since waterproofing and water-repellency are to such an extent interrelated, and since often the same reagents are used to effect either finish, no distinction has been made as to which purpose the reagents serve. The reader may turn to the subject index where he will find a listing of all reagents used during the past 10 years . . .—*Introduction.* The Supplement presents abstracts from the literature of 1948 and the early months of 1949.

Methods of setting nylon fabrics. Anon. *Brit. Rayon & Silk J. 26,* 65, 78 (Feb. 1950).

A report of a talk by G. K. Mecklenburgh. Setting imparts dimensional stability and is capable of producing a permanent shape in nylon fabrics. Boiling water, steam pressure, and dry heat at 230°C seem about equally effective in reducing residual shrinkage. Greater stability is produced, however, if shrinkage is allowed to take place during the setting process. A detailed explanation of the theory of the mechanism of setting is given. The practice of using the hot air type of setting machine and the heat transference method with hot metallic surfaces is discussed.

Modification of fiber and fabric properties by wrinkleproofing and stabilizing agents. D. D. Gagliardi & A. C. Nuessle. *Am. Dyestuff Reptr. 39,* 12-19 (Jan. 19, 1950).

The chemical, physical and mechanical properties of cellulose fibers and fabrics may be altered to various degrees by treatment with a large number of compounds whose action on cellulose appears to involve the formation of either chemical or physical cross-linking of the molecular chains. The formation of such crosslinkages, among other things, reduces creep and fiber extensibility, raises the elastic recovery, produces wrinkle resistance and dimensional stability, etc., and produces fabrics of lower resistance to tear and abrasion at high stress application. The reduction in strength properties is shown to be caused not by acid or heat degradation of the cellulose, but from the decrease in fiber extensibility. With the exception of formaldehyde and glyoxal reactions, the reactions taking place on curing most wrinkleproofing and stabilizing agents in cellulose can be reversed by mild acid hydrolysis. The original properties of fibers and fabrics are generally restored by the removal of the reaction product.

Mothproofing of wool. I-IV. *Wool Science Rev.,* No. 2., 31-43 (Feb. 1949); No. 3, 16-25 (July 1949); No. 4, 3-15 (Nov. 1949).

Part I is an account of the life history of the clothes moth. Part II is a brief discussion of beetles that attack wool. Part III describes the testing of mothproofing treatments. Part IV is a description of treatments to protect wool from attack by moth and beetle grubs.

Polyvinyl chloride pastes. D. L. Clarkson & N. D. MacLeod. *Chemistry & Industry,* 751-55 (Oct. 29, 1949).

Suspensions of polyvinyl chloride (p.v.c.) in plasticizers which form firm gels on heat-treatment can be applied by spreading much more cheaply than calendered coatings of similar prop-

erties. Desirable properties for the emulsion-polymerized p.v.c. and for the plasticizers are discussed. The pastes are thixotropic at room temperatures, set to a "semi-gel" at 100°C, and are converted to a strong solid gel at 150°C. Various viscosities of paste are available for dipping, general-purpose uses (dipping, casting, and molding), and spreading. Tensile strength and cold flexibility can be varied by changing p.v.c.-plasticizer ratio and plasticizer. Inorganic fillers weaken the gel, but reduce cost, surface tack, and elasticity. Leathercloth made by spreading one or 2 layers of p.v.c. paste on cloth are non-flammable if suitable plasticizers are used and have superior flex-cracking resistance and aging properties. Coatings up to 20 oz/sq. yd. can be rapidly gelled in a continuous tunnel, and embossing is easily performed.

Problems in textile flammability. Geo. S. Buck, Jr. *Textile Industries 114*, 101-2 (Mar. 1950).

A brief discussion is given on the major problems in textile flammability. These include the determination of the degree of flammability which shall be presumed hazardous and the perfection of a method for measuring fabric flammability.

Process of improving the crease-resisting properties of textile materials. Croyden M. Whittaker (to Courtaulds, Ltd.). Can. P. 454 387, Feb. 1, 1949.

A process for improving the crease-resisting properties of textile materials which comprises impregnating the textile materials with an aqueous solution containing a partially condensed resinous aldehyde condensation product, ammonium thiocyanate and sodium hexa-metaphosphate and thereafter subjecting the treated materials to the action of heat to convert the partially condensed resinous aldehyde condensation product into an insoluble condensation product.

Resinous aromatic acid salts of a guanidine as mothproofers. Vartkes Migrdichian (to Am. Cyanamid Co.). USP 2 499 226, Feb. 28, 1950.

A mothproofing composition containing a guanidine salt of benzoic acid dissolved in a mixture of ethyl alcohol and carbon tetrachloride.

Shrinkproofing and feltproofing of keratinous textile fibers. Jonas Kamlet, Mark Weisberg & Leo Beer (to Alrose Chemical Co.). Can. P. 453 789, Jan. 4, 1949.

A process for chlorinating wool and other keratinous textile fibers, which comprises treatment of the fibers in aqueous solution with formaldehyde and simultaneous treatment of the fibers with a chlorinating agent consisting of an acid aqueous solution of the reaction product of a member of the group consisting of sulfamic acid and salts of sulfamic acid with a member of the group consisting of the salts of hypochlorous acid.

Statutory requirements for flame resistance in textiles. Geo. S. Buck, Jr. *Ind. Eng. Chem. 42*, 428-30 (Mar. 1950).

This is a discussion of various statutory requirements for flame resistance in textiles; the recommendations of the National Board of Fire Underwriters and the California regulations are noted briefly. The difficulties encountered in establishing adequate standards for flame resistant textiles and the efforts being made by various agencies in this direction are mentioned.

Theory and practice of crease-resistance in textiles I-II. R. W. Moncrieff. *Textile Mercury & Argus 120*, 935-39 (June 10, 1949); 966, 969 (June 17, 1949); 1011, 1013, 1015 (June 24, 1949).

Part I is a discussion of the mechanism of creasing. Part II discusses the reduction of the tendency to crease and the action of the urea-formaldehyde finish in this respect. Part III considers cross-linkages and the mechanism and chemistry of the urea-formaldehyde process.

Water-impermeable, water-vapor-permeable coated fabrics. Geo. E. Martin, Harold S. Sell & Bruce W. Habeck. *Textile Research J. 20*, 123-32 (Feb. 1950).

This is a discussion of the research work and the laboratory field testing involved in the development of a coated fabric to meet the need for a water-impermeable, water-vapor-permeable fabric.

TESTING AND MEASUREMENT G

Application of large-number analysis in winding and knitting. Helmut Bihler. *Textil-Praxis 4*, 23-6 (Jan. 1949); *in German.*

The information gained from "large-number analysis" is a valuable complement to detailed investigation. Tests are described and illustrated by graphs in which the values of the quantity under test are plotted against the frequency of occurrence. The values show a relation to the law of binomial coefficients which obtains with Galton's apparatus. Examinations of yarn strength during spooling, and of density of knitted fabrics are described; the resultant curves are explained. A simple permanent knitting check is given. Other

applications are: productivity of operatives and machines, time-studies, calculation of piece-rates and planning. Statistical analysis of machines is a better and more objective method than an examination of quantitative output. The largest possible number of data should be collected to give representative results. Sometimes curves must be adjusted to obtain normality.

Artificial light-fastness tests on colored textiles. W. L. Lead. *J. Soc. Dyers Colourists 65,* 723-32 (Dec. 1949).

A resumé is given of the various factors which influence the rate of fading of colored textiles by natural and artificial light. As a result of this work the following conclusions are reached: 1) humidity influences fading greatly, 2) two dyes of equal fastness under one set of conditions are not necessarily of the same fastness under another set of conditions, 3) it is impossible to express in a single number all the information about how a dye fades. The author concludes by stating that agreement on a suitable physical method of measuring the degree of fading would help to remove some of the guesswork from present methods of color-fastness testing.

Examination of damage in wool. A. D. J. Meeuse, A. J. Hietink & C. J. Gorter. *Mededeling van het Vezelinstituut T.N.O. No. 97; in English.*

The first part of this report is a discussion of damage in wool, causes of damage, etc. The second part is a tabulation of methods of test for damage in wool; for each method are given references to the literature, causes of the damage the method tests for, and remarks. Stains and reagents are given when applicable. The survey is based on 292 references which appeared prior to 1948 and during the early part of 1948.

Fastness to light of dyed textiles. S. Burgess. *J. Soc. Dyers Colourists 65,* 732-40 (Dec. 1949).

The significance of the light fastness of dyed textiles in trades intermediate between those in which it must be very high and in those in which it is of slight importance is discussed. The method of use of the S.D.C. standards is considered and an account given of a series of exposures indicating various difficulties of assessment. The importance of exposing dyeings of binary and tertiary mixtures in addition to those of single dyes is stressed. It is shown that the same dye may have widely varying fastness on different fibers. Also discussed are the dyer's practical problems in connection with shading. The use of fading lamps is discussed, and some practical results are given of

a comparison made between exposures of the same dyeings in a Droylsden Fadeometer and to sunlight.

Flexibility of cotton and staple fibers. Otto Heimeran. *Textil-Praxis 4,* 92-7 (Mar. 1949); *in German.*

Various methods for measuring flexibility are described. The indirect method involving measurement of the moment of twist of a yarn is considered particularly. Measurements were made on staple rayon and cotton yarns of the same number, and on cotton yarns of various numbers.

Flourescent materials used as tracers. Anon. *Textile Bull. 76,* 70 (Jan. 1950).

Note: Use of fiuorescent dyes as tracer materials in felt has been suggested by R. R. Stevens, chief research and development engineer of the Felters Co. White wool may be dyed or treated with such materials which are invisible in ordinary light but are immediately revealed upon exposure to ultra-violet light. Added in desirable proportions to untreated wools, previous to manufacture, this technique provides a new tool for studies in felting and other uses such as product identification.

Modified abrasion test for warp-sizing study. Jas. W. Stallings & Daniel L. Worth. *Textile Industries 114,* 94-8 (Mar. 1950).

The modification of the Walker loop test for the Walker Abrader for use in evaluating warp sizings is described with details given of the test procedure, operation of the abrader, recording test performance, etc. This modified laboratory test has proved as reliable when checked in mills on a production basis.

Novel method proposed for wool grading. W. J. Woolstan. *Textile World 100,* 109, 111 (Jan. 1950).

After a few days practice an inexperienced person can complete these tests in less than 30 min. The procedure is as follows: a sample draw is taken from a wool top, the fibers are laid out in an array on a blackboard, tips of various fiber lengths are traced with chalk; this outline is then traced on transparent paper; observations of the sample are written down; compare tracing with master outline that has been prepared for each quality of fiber. To measure fineness, the fibers are cut with a special instrument to a 2½ cm. length; batches of 500 fibers each are counted out and weighed; counts are calculated along with the finest spinning count that can be made for

any number of fibers per yarn. Tables of fineness comparisons, comparison of quality, fibers, and count are given.

Practical assessment of the light fastness of dyeings. T. H. Morton. *J. Soc. Dyers Colourists 65,* 597-605 (Dec. 1949).

The testing of light fastness of dyeings against standards such as originated by the Soc. of Dyers and Colourists is discussed. It is first shown that certain anomalies exist, in that the standard sample and the dyed sample do not necessarily follow the same course of fading. These discrepancies are examined on the basis of simple theory and recommendations are made in respect to the practice of light-fastness testing which includes consideration of the following factors: 1) intensity of light and duration of exposure, 2) type of light, 3) temperature of sample, 4) moisture content of sample, and 5) composition of atmosphere.

Place of research in textile colleges. Kenneth R. Fox. *Textile Research J. 20,* 132-35 (Feb. 1950).

This is the text of an address given by the author at the Anglo-American Conference on Textile Education held at Buxton, England, October 29-30, 1949.

Quantitative measurements of light fastness. T. Vickerstaff & D. Tough. *J. Soc. Dyers Colourists 65,* 606-12 (Dec. 1949).

The conditions and criteria of light fading tests are discussed. It is suggested that greater precision could be obtained by closer control of fading conditions including photoelectric measurement of light exposure, together with improved methods of assessing color changes in terms of the number of just noticeable differences of color from the original shade.

Separation of cotton and rayon or cotton and acetate for analytical purposes. Oskar Heim. *Anal. Chemistry 22,* 360 (Feb. 1950).

The method given in this paper effects a clean separation of cotton and rayon (regenerated cellulose) or cotton and acetate at room temperature. using a solution of sodium zincate and ammonium thiocyanate. The solutions are readily filterable and no cutting up of the sample is required. The method offers considerable advantages over the one in general use at present (ASTM D629-46T, using calcium thiocyanate).

Some studies of the fading of simple monoazo dyes. E. Atherton & I. Seltzer. *J. Soc. Dyers Colourists 65,* 629-38 (Dec. 1949).

The fastness, on exposure to the light from a carbon arc, of a series of simple monoazo dyes in cellulose acetate film was measured. A relationship between chemical constitution and the order of light fastness was proposed. The light fastness of each dye was characterized by a destruction efficiency constant. In defining this quantity, account was taken of the specific absorbing powers of the dyes for the heterochromatic light used to fade them. Special precautions were taken to standardize exposures by means of a light flux integrator.

Special characteristics of light sources for fading and degradation testing. B. S. Cooper & F. S. Hawkins. *J. Soc. Dyers Colourists 65,* 586-96 (Dec. 1949).

Measurements of the spectral distribution of energy in the visible and ultra-violet regions for the enclosed carbon arc commonly employed in the fading test apparatus are described. Tests were made on both A.C. and D.C. arcs, and the effect of electrical loading, asymmetrical polar distribution, and the obscuration of the enclosing globe were determined. Data are also presented for the high-intensity carbon arc and for 3 types of metal-vapor electric discharge lamps which might be suitable for photochemical work. Finally, comparisons between tungsten incandescent sources and sunlight for corresponding spectral regions are shown.

Testing color fastness in sunlight and artificial light. Gösta Nordhammar & Nils Gralen. *J. Soc. Dyers Colourists 65,* 741-42 (Dec. 1949).

Spectrophotometric measurements were made of 8 dyes on cotton or wool faded in sunlight and in the Fadeometer. The course of fading of all the dyeings appeared to be similar in both cases.

Testing textile fibers. I-III. Hans Böhringer. *Textil-Praxis 4,* 11-14 (Jan. 1949); 52-7 (Feb. 1949); 257-59 (June 1949); *in German.*

This is a description and discussion of methods of testing fibers developed and used in the Schwarza textile research laboratory. Topics covered include: 1) introduction; 2) general test conditions, unevenness of materials, and measurement accuracy; 3) density; 4) count; 5) irregularities of count; and 6) tensile behavior. Apparatus for density determination is illustrated, and density data for 17 fibers, natural and synthetic, are given in a table. In fiber fineness determination, 50 fibers from each of 10 parallelized fiber bundles are weighed on a torsion balance. Microscopical

observation are used to determine fiber fineness irregularities.

Clothing and fabrics G 1

Abrasion testing of wool fabrics. F. H. Germans. *Mededeling van het Vezelinstituut T.N.O. No. 91; in Dutch.*

The drawback of the abrasion test is its unsatisfactory reproducibility. A description is given of an apparatus especially designed to investigate reproducibility. Emery paper was used as an abradant. Preliminary investigations were made using plastics and keratin blocks; it was found that the loss of weight of the sample was independent of the surface area of the sample and was directly proportional to the material, the factor of proportionality being a property of the material. Microscopical inspection of the wool fibers did not reveal in a single instance a fiber that looked like a fiber abraded with emery paper. The fibrilous ends, characteristic of worn out wool, did not occur in abraded samples. This was considered a strong argument against the usefulness of an abrasion tester as a test imitating the process of wear. As fibrilization seems to be a very important aspect in wear, especially of wool, a quantitative measurement of the fibrilization of wool should give a better indication of the quality of wool with respect to actual wear than the abrasion tester does. Future work will be undertaken along this line.

Determination of crimp in cotton fabrics. H. Köb. *Textil-Praxis 4,* 20-1 (Jan. 1949) ; *in German.*

The load/elongation curve of medium count cotton yarns is practically lienar. It is assumed, for the tests described, that weaving stresses will not alter this. The point at which crimps are straightened cannot be determined, but conclusions are drawn from progressive leading of the threads. The "weaving stretch" is defined; a method is described for determining the stretch percentage of medium quality cotton yarns. Test values show that the preparation of the yarn for weaving has no effect. While this test is better in some respects than the simple straightening of crimps, it has yet to be proved on a large scale.

Evaluation of flame-resistant fabrics. J. M. Church, R. W. Little, & S. Coppick. *Ind. Eng. Chem. 42,* 418-27 (Mar. 1950).

Uniform and consistent results have been obtained by the establishment of rigid procedures for flame tests, which now make it possible to measure the comparative effectiveness of various flame-resistant treatments and determine the relative value of flame-resistant fabrics for any given purpose. Consideration has been given to not only the extent of flaming produced in the combustion of the fabric but also the rate of burning and the duration of the afterglow, employing the vertical, horizontal, and angle tests.

Fabric weight nomogram. J. Arlitt. *Textil-Praxis 4,* 65-6 (Feb. 1949) ; *in German.*

A nomogram composed of 2 parts, one for warp and one for filling, is given for determining the weight of a fabric. The weight of fabric is found on a vertical scale between the 2 nomograms by drawing a line between the values found for weft and warp and reading at the point of intersection.

Measurement of the thermal transmission of textile fabrics. G. Winston & S. Backer. *Textile Mfr. 76,* 51-6)Feb. 1950).

See TTD: *7,* 234.

Pore space: distribution in textile materials. Ritter and Drake technique. Anon. *Fibres 11,* 18 (Jan. 1950).

The measurements of the effective porosity of 6 types of oxford fabrics using the Ritter and Drake technique are described. These results showed that the effective porosity is but little influenced by mercerization, but is markedly lowered by immature cotton. Also affecting the effective porosity were the following: 1) increasing number of warp yarns, 2) vat dyeing, and 3) water-repellent treatments.

Tear test for fabrics. Swiss Assn. for Testing Technical Materials. *Textile-Rundschau 4,* 90-5 (1949) ; *in German.*

A simple tear test for determining the breaking load and elongation at rupture of textile fabrics is described. (Swiss standard SVMT 25 D 1601.)

Instruments and instrumentation G 2

Accelerated waste treatment methods. E. G. Kominek. *Chem. Eng. Progress 45,* 417-20 (July 1949).

The accelerated methods considered are high rate coagulation and high rate biological treatment. Diagrams and descriptions of both methods are given.

Apparatus for the measurement of the shrinkage and contraction of woven yarns. Jean Henno & Robt. Jouhet. *Bull. de l'Institut Textile,* No. 17, 57-8 (Feb. 1950) ; *in French.*

An apparatus is described for the accurate meas-

urement of the shrinkage and contraction of woven yarns. A diagrammatic sketch of the device is also given.

Automatic control of moisture. Ralph V. Coles. *Electronics 22,* 82-6 (Nov. 1949).

This is a discussion of the Fielden Drimeter, an instrument for measuring the moisture content of a moving strip of fabric, and the automatic controls used in connection with the Drimeter. The circuit diagram of the automatic-control unit is given and is discussed in some detail.

Comparing luster of textiles—use of cathode ray oscilloscope. Anon. *Brit. Rayon & Silk J. 26,* 69 (Feb. 1950).

The cathode ray oscilloscope has been adapted to compare luster automatically. The equipment consists of a turntable driven at 3,000 rpm by a synchronous motor. A sample of poplin is mounted concentrically with a sample of satin. A light is shone on either, and the reflected light picked up by a photo-cell. The output of the photo-cell is fed to the Y plates of oscilloscope. The pattern is the graph of the variation of light intensity in the course of a revolution of the cloth in its own plane. Each different cloth produces a different pattern. The technique for the use of this instrument is given.

Metal detector for conveyors. Kenneth Urbach. *Electronics 22,* 80-3 (July 1949).

The principles of operation, circuits, and installation and maintenance of a metal detector are described. The operation of the instrument, which is applicable to textile processes, is based on the momentary distortion of the r-f field when a metallic particle passes through or near the tank coil of a stable oscillator. This distortion may result in an increase or a decrease in the efficiency or Q of the tank and will, therefore, be reflected back into the plate circuit as a change in the resistive component, giving rise to a change in voltage magnitude. If this change is in the negative direction, and of sufficient steepness and amplitude an alarm signal results.

Ericcson Centralograph. Anon. *Textile Mercury & Argus 122,* 257-61 (Feb. 17, 1950).

Features of the Swedish Ericcson Centralograph are described and its application to textile processes discussed. The Centralograph continuously and automatically records on a central recording apparatus all running and stopping times of the machines under supervision. It also goes a step further in that it records the particular reasons

for all stoppages. Thus, by means of a Centralograph, placed in his office, the manager of a spinning mill or weaving shed is given a minute-to-minute diagrammatical picture of the work under his control. The recordings can be conveniently studied during actual working time and are available for closer study and analysis in the form of complete diagrams.

Measurement of the speed of shrinkage of crepe yarns during desizing. Jean Henno & Robt. Jouhet. *Bull. de l'Institut Textile,* No. 17, 55-6 (Feb. 1950); *in French.*

An apparatus for recording the shrinkage and speed of shrinkage values of crepe yarns during desizing is described briefly. A diagrammatic sketch is also given.

Modern microscopy of films and fibers. F. F. Morehead. *ASTM Bull.,* No. 163, 54-6 (Jan. 1950).

Brief excerpts are given of a paper presented at a meeting of ASTM Committee D-13 on Textile Materials held in Philadelphia, Oct. 20, 1949. The uses of the optical microscope and the election microscope are noted briefly and illustrations are given showing some of the applications of these instruments. The phase microscope and its specialized applications are noted briefly also.

New technique for cutting very thin sections and its application to the electron microscopy of fibers. Sanford B. Newman. *ASTM Bull.,* No. 163, 57-60 (Jan. 1950).

A new method of preparing very thin specimens for use with the electron microscope and its application to the study of textile fibers is described. The new technique involves the embedding of the specimen in a copolymer of 80% polybutyl methacrylate and 20% polymethyl methacrylate and feeding the specimen to the knife of a microtome by the thermal expansion of a brass block containing the embedded material. See also "Ultramicrotomy by a new method," TTD: *7,* 67.

Photometric measurement of the dust-retention value of fabrics. Jean Henno & Robt. Jouhet. *Bull. de l'Institut Textile,* No. 17, 63-5 (Feb. 1950); *in French.*

The authors propose an appliance for dusting woven material under well defined conditions, and a method of photometric measurement of the dust-retention value of fabrics.

Planning for automatic process control. Anon. *Electronics 22,* 72-9 (Oct. 1949).

This is a discussion of a number of instruments used for automatic process control and their ap-

plications in a number of industries, including the textile industry. Representative types of sensing and measuring elements, automatic controllers, and correcting devices are illustrated diagrammatically and briefly described in a table. In another table examples of process-control applications in the textile industry are characterized briefly. The textile processes mentioned include: application of size solution to yarn before weaving, continuous bleaching of cloth, dyeing of piece goods, warp sizing operation on cotton slasher, and neutralizing of wool.

Research on the measurement of wet bulb depression temperature. Maurice Valet. *Bull. de l'Institut Textile,* No. 17, 47-54 (Feb. 1950); *in French.*

A theoretical study showed that it is possible to make a psychrometer with thermocouples, the deviation of which is proportional to the wet bulb depression temperature of the surrounding air. The device here studied gave the expected results and permits the direct reading of the wet bulb depression of any given atmosphere on a sensitive galvanometer. The psychrometer adjusted in a still atmosphere gives accurate measurements and gains its equilibrium instantaneously.

Stop motion or signalling device. Wm. E. Stanley & Cyril H. Edwards (to Camille Dreyfus). Can. P. 455 243, Mar. 15, 1949.

In a device for detecting local changes in density in a travelling textile fabric and comprising a small well defined light source and a photo-electric cell, an optical system arranged to direct light from the source towards the fabric as a beam forming an image of the source in the vicinity of the fabric and thence after passage through the fabric, to a mirror arranged to reflect the light back through the fabric as a beam illuminating a substantial area of the cathode of the cell.

Testing device for measuring the mechanical properties of rayons in an atmosphere of low humidity. Jean Henno & Robt. Jouhet. *Bull. de l'Institut Textile,* No. 17, 59-62 (Feb. 1950); *in French.*

An apparatus is described for recording the elongation strength values of viscose rayon, acetate rayon, and natural silk yarns, placed in a water-tight enclosure and enabling tests to be made in more or less dry, or absolutely dry, atmospheres.

Use of X-rays in the investigation of fiber structures. *Wool Science Rev.,* No. 3, 39-50 (July 1949).

This is a discussion, written for the layman, of the principles of x-ray diffraction and their application to the study of fiber structure.

TEXTILE MILLS H

Chalk marks help reduce imperfect work. E. H. Helliwell. *Textile World 100,* 113, 180, 182, 184 (Jan. 1950).

Colored chalk may be used for identifying operators responsible for production. Over 100 markings are possible on each shift, with no duplications, when using single colors and combinations of colors. A special chalk, which provides positive identification and complete removal under all scouring, bleaching, dyeing, and finishing operations has been developed. The use of colored chalk as an aid to production and quality in a variety of operations from the picker room to the weave room is described briefly.

Cutting down steam costs. C. T. Wade. *Dyer 102,* 377-81 (Oct. 7, 1949).

Suggestions are given for the conservation of steam in the dye house and other processes in wool finishing. Sound plant design is an important factor in the efficient utilization of steam. The use of back-pressure steam is also noted.

DEVELOPMENTS IN THE COTTON, RAYON AND SILK INDUSTRIES IN GERMANY DURING THE PERIOD 1939-1945. F. Charnley, R. G. Fargher, D. W. Hill & L. H. C. Tippett. (BIOS Overall Rept. No. 13). London, H. M. Stationery Office, 1949. 178 p. Price: 3s.

Many investigations of the German textile industry have been made since the end of the war and described in B.I.O.S., C.I.O.S. and F.I.A.T. reports. All of those that are relevant and available have been used freely in compiling this report. Not everything described in subsequent pages has been seen by the authors. Nevertheless, we have tried to place the German technical achievements in their proper perspective in relation to the British textile industry and to assess critically the contributions that the Germans have made to technical advances in the last decade. In doing so we have not drawn equally on all the reports which, indeed, we have found to be of a most uneven standard. Some observers have been critical and too easily convinced of German superiority, while others appear to have set their faces against finding in Germany anything worthy of praise.—*Introduction.*

Effective instrument maintenance. E. A. Murphy.

Textile Industries 114, 129, 131, 133-4 (Mar. 1950).

A discussion is presented on the maintenance of electric and pneumatic controllers, maintenance problems in specific textile mill applications, and the importance of a well planned maintenance program with suggestions for organization of such a program.

Effective lint collection. S. H. Fain. *Textile Industries 114*, 106-08 (Mar. 1950).

An Airmat lint arrester, installed in the dust basement of Erwin Cotton Mills, eliminates the lint and dust nuisance from the picker exhaust and at the same time permits recirculation of the conditioned air. Fire protection and filter operation of the lint arrester are described.

Electronic instrumentation. L. E. Cuckler. *Am. Wool Cotton Reptr. 64*, 18-19 35 (Feb. 23, 1950).

In address at the Georgia Institute of Technology, the use of electronic principles and devices in the textile industry is discussed. Included in the discussion are such devices as the Electronik potentiometer, the Moist-O-Graph, the Radiamatic, etc.

Electrostatic air cleaning. Anon. *Am. Wool Cotton Reptr. 64*, 11-12, 32 (Jan. 26, 1950).

Electrostatic air cleaners are reported to remove microscopic air-borne particles that could not possibly be removed by conventional mechanical filters. The essential elements, methods of removing dirt from the collector plate, tests for efficiency, and applications in textile mills of electrostatic air cleaners are discussed.

Handling devices reduce damage to cloth rolls. Roy Denial. *Textile World 100*, 106-07 (Jan. 1950).

Three special attachments have been made and put on ordinary fork trucks to handle 1350 lb. rolls of rayon fabric. One of these is a boom which picks up by a rod through the center of the roll; another consists of 2 long arms, the proper distance apart to fit under protruding rods through the rolls, which permits picking up 3 rolls at once; the third attachment consists of a 2 ft. boom fitted with an automatic latch used in conjunction with a flat lifting bar to lift and carry rolls on end without damaging the edges of the fabric. Savings have resulted in labor and in greatly reduced damage to the fabric in the rolls over other methods of handling.

Huntsville's new power system. Anon. *Textile Industries 114*, 99-101 (Mar. 1950).

The new electrical distribution system of the Huntsville Manufacturing Co. is described. The new system is reported to give fewer safety hazards, reduced maintenance, reduction in power loss, etc.

Injuries and accident causes in dyeing and finishing plants. Marion Hammett. *Textile Industries 114*, 95-7 (Feb. 1950).

The rate of accidents in the textile dyeing and finishing plants is reported to be much higher than the all-textile rate. Practically all the causes of these accidents and injuries fall into 3 general groups: 1) hazardous arrangements, 2) defective agencies, and 3) improperly guarded agencies. A government study has shown that many of these can be avoided.

Metallizing speeds repairs on textile machine parts. John E. Wakefield. *Textile World 100*, 104, 105, 184, 186, 188, 190, 192 (Jan. 1950).

The use of gas flow meter units with metallizing guns and an alloy high in molybdenum to serve as an under coat, have greatly improved results and reduced time for metallizing parts. A light roughing cut, or cleaning, with emery, followed by an alloy undercoat, then the final coating of metal is all that is usually necessary. The gas-flow meter, application of the new method, and the available alloys are described. Methods of application on different types of parts are discussed.

Modern production methods. Anon. *Textile Industries 114*, 98-115, 117, 119, 123, 125, 127-8, 131, 133, 135, 137-8; **Modern production methods (knitting).** Anon. *Ibid. 114*, 14-3, 145, 147-8, 151, 153, 155 (Feb. 1950).

Actual case histories on the performance of equipment, made available by suppliers and engineers to the textile industry, are given. These articles are presented to emphasize what mills are doing to increase production, lower operating costs, improve quality, utilize manpower more efficiently, reduce and control waste, and to secure improved operating conditions.

Modernism looms as textile mill design factor. Saml. B. Lincoln. *Am. Wool Cotton Reptr. 64*, 19, 219-21 (Feb. 9, 1950).

A review is presented of the progress being made in the design, construction, and equipment of textile mills.

Problems arising from the disposal of effluents containing synthetic detergents. H. H. Goldthorpe, W. H. Hillier, C. Lumb & A. S. C.

Lawrence. *Chemistry & Industry*, 679-82 (Oct. 1, 1949).

Sewage and industrial wastes are water-borne, and the task of sewage disposal works is "unloading" these wastes to a sufficient extent before discharge of the carrier water. To do this, sewage is first passed through settling tanks where, sometimes with addition of precipitants, solids are settled out. It then goes to percolating or activated sludge beds, for biological removal of organic matter. Synthetic detergents reduce sedimentation rates and thus place more load on the low-capacity biological processes, while some new detergents reduce the effectiveness of the biological treatments as well. Removal of grease as scum, particularly from wool wastes, is made difficult. Discussion on the paper brought out a divergence of opinion on the seriousness of the problem, and emphasized that considerable work is being done on it by both detergent manufacturers and sewage disposal groups. Each detergent presents a different problem, e.g., non-ionic detergents cause less trouble than most anionic ones except soap.

Reduced textile pollution. Jos. A. McCarthy. *Am. Wool Cotton Reptr. 64*, 9 (Feb. 16, 1950).

The various forms of textile wastes that cause stream pollution and means for reducing pollution loads are discussed.

Storage and handling of lubricants. A. F. Brewer. *Lubrication 35*, 1-12 (Jan. 1949); *Textile Bull. 75*, 61-4 (Sept. 1949).

This is a review of efficient and safe methods of storing and handling of all types of greases.

Test hook-up for atomizer heads. Anon. *Textile Industries 114*, 91 (Mar. 1950).

It is difficult to reset humidification atomizers correctly, after cleaning, so that the proper output of moisture is obtained. A hook-up to test atomizer output after cleaning is described and illustrated.

Textile machinery developments in England. J. S. Barke. *Indian Textile J. 60*, 199-200 (Dec. 1949).

Four new textile machinery developments are described. The first is a new tensioning device for use in the winding of crepe; it is claimed this device will make it possible to wind at high speeds from large stationary packages. The second development is an aluminum alloy warp beam specially designed for warping rayon and nylon. The third item is a hydraulic warp beam truck that practically eliminates all lifting on the part of the operator. The last item described is a new high-speed re-drawing machine especially suitable for nylon and high and medium tenacity rayons.

Textile observations in Europe. Edwin D. Fowle. *Papers Am. Assn. of Textile Techn. 5*, 53-63 (Mar. 1950).

This is an account of textile developments as observed on a trip to Europe. Descriptions are given of some of the outstanding new machines shown at the Textile Machinery Exhibition at Manchester, England. Among the machines noted are: the automatic doffer, developed by the B.C.I.R.A.; the Nastrofil spinning frame; Hegemax device; the Platt slubber flier; the Schweiter automatic winder and feeding device; the Fayolle & Ancet circular loom; the Balmes high draft system, etc. Other European technical developments of interest are reported in accounts of visits to textile mills and machinery manufacturers in other countries.

Waste treatment cost need not be excessive. Wendell B. Goode. *Textile World 100*, 100-02 (Jan. 1950).

A plant, designed to treat 1,000,000 gals. of fulling, scouring, and finishing wastes every 24 hrs., consists of an 8 ft. rotary screen, chemical treatment house containing 3 dry feeds and a chlorinator, mixing chamber, flocculation chamber, secondary settling tank, chlorine-detention chamber, a number of sludge-settling basins, pumping equipment for return of liquors to the chemical building, and utility pumping equipment. One man operates the entire treatment plant. A sample observation and control sheet and analysis are presented.

CHEMISTRY AND PHYSICS OF TEXTILE MATERIALS I

Action of light on calcium alginate rayon. N. H. Chamberlain, F. Lucas & J. B. Speakman. *J. Soc. Dyers Colourists 65*, 682-92 (Dec. 1949).

Using the full radiation of a quartz-mercury vapor lamp to study the effect of light on calcium alginate rayon, it was found that neither oxygen nor water vapor is essential to degradation although the rate at which it occurs is accelerated slightly by water. It was found, however, that a good linear relationship between the reciprocal of tenacity and the time of exposure exists. When calcium alginate yarn was irradiated in a stream of dry nitrogen water and carbon dioxide were liberated the degradation was extremely severe.

In all cases theoretical considerations of underlying mechanisms are fully discussed. Finally, although it was found that calcium alginate undergoes severe degradation on exposure to light the examination of other alginates suggests that a clue to the preparation of a light resistant alginate may be possible.

Action of light on cellulose dyed with vat dyes. A. Landolt. *J. Soc. Dyers Colourists 65,* 659-73 (Dec. 1949).

The tendering activity of 38 vat dyes was examined by various tests and an attempt made to discover from the constitutions of the dyes which substituents are responsible for tendering or non-tendering properties. It was found that most of the anthraquinone-carbazole dyes tested are non-tendering. Tests on other classes of dyes showed that certain substituents exert a tendering influence and others a protective action. It was found that the simpler compounds of the vat dye series have an inherent tendering action which is repressed or enhanced by the nature and orientation of the substituents and resulting configuration. It is not likely therefore that any general rule of tendering based on the chemical constitution of dyes can be given. Finally, it was found that both oxidation and reduction phenomena can be brought about by irradiating cotton dyed with vat dyes.

Action of light on dyes. E. J. Bowen. *J. Soc. Dyers Colourists 65,* 613-17 (Dec. 1949).

A detailed study made to ascertain the effect on dyes showed that excited singlet levels of dye molecules formed by absorption of light may pass triplet or "diradical" levels, which may be chemically more reactive. Many of the photoreactions of dyes have been formally interpreted as "electron transfer" reactions, but this work showed that details of the process are usually obscure, especially in regard to the relative parts played by the singlet and triplet levels, the states of ionization of the radicals formed, and the intervention of reactive species. The author suggests also that experiments to bring out the properties of the triplet levels would be helpful in the further understanding of dye photoreactions.

Action of light on jute. H. J. Callow & J. B. Speakman. *J. Soc. Dyers Colourists 65,* 758-63 (Dec. 1949).

When jute is exposed to light and air, all the main components undergo degradation. Aqueous extracts of the exposed material contain aldehydes and are also more acidic than extracts of the unexposed jute. It is this degradation which is the probable cause for the discoloration of jute when exposed to light and air. In order to try to prevent this discoloration acetylation was tried after proper bleaching of the samples. When the degree of acetylation was properly fixed neither discoloration or bleaching occurred during exposure.

Action of ultra-violet radiation on proteins. R. Roberts. *J. Soc. Dyers Colourists 65,* 699-702 (Dec. 1949).

The action of ultra-violet radiation on serum-albumin is discussed. These experiments showed that in the presence of nitrogen, polymerization occurs, but in the presence of oxygen the protein molecule is degraded. The polymerization takes place by a free-radical mechanism. The degradation in oxygen is due to photo-oxidation by hydroxyl radicals.

Battle of fibers. P. W. Webb. *Rayon & Syn. Tex. 31,* 39-41 (Feb. 1950); 62-3 (Mar. 1950).

See TTD: *7,* 167.

Elasticity of textile fibers. Herrmann Mutschler. *Textil-Praxis 4,* 106-08 (Mar. 1949); *in German.*

Measurements of raw fibers were made on samples taken from bales—a sample compressed in a cylinder and the "compressed volume" measured. The pressure was gradually released and the "relaxed volume" measured. The bulk elasticity was found from a formula. Values of compressed, relaxed and "elastic" volume for wool, cotton and staple rayon are given in 2 tables. The volume changes of some fibers were compared in carded and combed spinning; differences in values were due to quality of the material or to the type of spinning. Measurements were also made at 20 points from bale opening to spinning. Maximum volume was reached on the card, and decreased with each passage through the drawing frames, fly frames, etc. The volume is largely affected by the type of opening machine used; the Kirschner and the 3-bladed-beater are compared as an example.

Hydrolysis and crystallization of cellulose. O. A. Battista. *Ind. Eng. Chem. 42,* 502-07 (Mar. 1950).

A comprehensive study has been made of the effect of time on the weight loss and D.P. of 10 representative samples of cellulose using both mild and drastic conditions of hydrolysis. The samples were purified cotton, bleached cotton lint-

ers, cotton linters pulp, wood pulp, textile rayon, tire yarn, Fortisan, Fiber G, and 2 experimental rayons. The per cent crystallinity as measured by acid hydrolysis (based on weight of residue) and the leveling-off D.P. are shown to be dependent on whether mild, drastic, or mild plus drastic conditions of hydrolysis are employed. On the basis of weight loss and D.P. data, mechanisms are proposed to account for the crystallization of cellulose chains simultaneously with chain splitting under conditions of mild and drastic hydrolysis, respectively. The effect of crystallization on hydrolysis was found to be more pronounced for regenerated celluloses than for native celluloses.

Importance of humidity in textile manufacture. J. Pollitt. *J. Textile Inst. 41,* P1-6 (Jan. 1950).

The effect of relative humidity on certain physical characteristics of yarn when knitted or woven into fabrics is discussed. The effect of relative humidity on such yarn characteristics as coefficient of friction, breaking rates and loads, extensibility, bending, flexural and torsional rigidity, and on the stress-strain properties are discussed in detail and illustrated by appropriate graphs.

Irreversible and reversible photobleaching of dyes. Robt. Livingston. *J. Soc. Dyers Colourists 65,* 781-85 (Dec. 1949).

Fifteen reaction steps were shown to occur in solutions of dyes and pigments. Although no one compound undergoes all of them, they, and probably additional reaction steps, must be considered as constituting the primary processes for photochemical reactions of dyes. Some attempt is made to suggest how these reaction steps may be related to irreversible and reversible photobleaching of dyes under conditions of technical importance.

Mechanism of photosensitized reactions in solution. Jos. Weiss. *J. Soc. Dyers Colourists 65,* 719-22 (Dec. 1949).

Photosensitized reactions in solutions generally proceed by mechanisms involving free radicals and radical ions. The initial step in all these processes is the interaction between an electronically excited form of the light-absorbing molecule and a suitable acceptor molecule which must be present in the system. A number of examples of reactions in solutions are cited particularly those where 1) the initial processes are identical with the elementary process of quenching of the fluorescence of the light-absorbing molecule and 2) where the light-absorbing molecule undergoes transition to a triplet state which is capable of initiating the photosensitized reaction.

Mechanism of the photochemical degradation of textile materials. G. S. Egerton. *J. Soc. Dyers Colourists 65,* 764-80 (Dec. 1949).

The photochemical degradation of textile materials is discussed under 2 main heads: 1) photolytic degradation with short-wave ultra-violet radiation; 2) photochemical oxidation with near ultra-violet and visible light. Under (1) it was found that degradation of cotton and other textile fibers with radiation of wavelength 2537 A is not dependent upon the presence of oxygen. Also discussed is the effect of vat dyes on the rate of degradation of cotton. Under (2) it was found that the photochemical degradation of cotton and other textile fibers by light transmitted through glass is increased by various dyes and pigments. The dyes may be either vat, acetate, direct cotton, basic, acid, or sulfur and the pigments include zinc oxide, zinc sulfide, and titanium dioxide. The degradation of the various textile fibers is dependent upon the presence of oxygen in the surrounding atmosphere; in its absence degradation is negligible. The mechanism of the degradation is discussed.

Observations on the anomalous light fastness of some dyed textiles. Philip Walter Smith. *J. Soc. Dyers Colourists 65,* 743-47 (Dec. (1949).

The anomalous behavior of certain direct and vat dyes on exposure to light under varying conditions is discussed. The effects of crease-resisting resins of the urea-formaldehyde type, delustering agents in rayon, and moisture on dyeing made with direct cotton, vat, and azoic dyes are reviewed.

Orientation and strength of cellulose fibers. W. Kast, L. Flaschner & E. Winkler. *Kolloid Z. 111,* 1-6 (Oct. 1948); *in German.* Abstracted in *Applied Mechanics Rev. 3,* 45 (Feb. 1950).

This paper describes an investigation aimed at correlating the degree of orientation of the structure of cellulose fibers with their mechanical strengths. Various degrees of orientation were produced in 2 types of fibers, each of which had been subjected to 2 kinds of handling during production. Mechanical stretching was the direct cause of the orientation in each case. X-ray interference patterns permitted measurement of the degree of orientation, which showed close correlation with the stretching process. For each material there appeared to be a limiting degree of orientation which was not exceeded by increasing the amount of stretching. It is concluded that for a given material the strength is increased by im-

proving the orientation, but that good orientation although necessary, is not a sufficient condition for high strength which depends on the structure.

Oxidation of azo dyes and its reaction to light fading. N. F. Desai & C. H. Giles. *J. Soc. Dyers Colourists 65,* 639-49 (Dec. 1949).

As a preliminary to a study of the light fading of dyes, the present work was undertaken to investigate the oxidation of both soluble and insoluble azo dyes by various reagents and to find if any correlation exists between resistance to oxidation and light fastness. It is shown that oxidation of azo dyes in an aqueous medium, with several common reagents, first disrupts the azo group and leads to the formation of a diazo compound and a quinone, then further decomposition occurs to yield a phenol and nitrogen and phthalic acid. A possible hypothesis is put forward suggesting that the initial step in such chemical oxidation is one of hydrolytic attack on the —C=N— bond of the hydrazone tautomer of the dye. It is concluded that it seems unlikely that a chemical reagent can be found to fade dyes as does light exposure and thus be suitable for a rapid sorting test.

Photochemical formation of atoms and radicals in aqueous solutions. M. G. Evans & N. Uri. *J. Soc. Dyers Colourists 65,* 709-13 (Dec. 1949).

Atoms or free radicals (OH, Cl, F, N_3, etc.) are formed by irradiation of aqueous solutions of ion pair complexes, e.g., $Fe^{3+}OH^-$, $Fe^{3+}Cl^-$. The radicals produced by electron transfer excitations can be detected by their ability to initiate the polymerization of vinyl compounds. Also presented in this paper are detailed mathematical treatments of the reactions involved.

Photochemical degradation of starch and allied carbohydrates. W. J. Whelan & Stanley Peat. *J. Soc. Dyers Colourists 65,* 748-57 (Dec. 1949).

The breakdown of carbohydrates by ultra-violet radiation was studied, using as the principal substrate the amylose component of potato starch. Two distinct types of photo-degradation were found: One type, occurring in the presence of oxygen, is a photo-oxidation followed by a light-sensitized hydrolysis and further oxidation, which results in the complete conversion of the amylose to carbon dioxide, via the intermediate products formaldehyde and formic acid, all 3 of which were identified. The second type of photo-degradation takes place in the absence of oxygen, and was studied in an atmosphere of highly purified nitrogen. The final products, which are as yet unidentified, do not include those of the aerobic degradation and are characterized by a marked resistance to subsequent photo-oxidation.

Photochemistry in relation to garment dyeing and dry cleaning. A. Breare. *J. Soc. Dyers Colourists 65,* 693-98 (Dec. 1949).

The effect of dyes on the photochemical oxidation of wool is discussed. As a result of this study it has been found that dyes generally offer protection to wool, but differ greatly in the degree of protection. It was also found that certain groups offer very little protection, and in some cases even accelerate the damage. The triphenylmethane group appears to offer the least protection. No clearly defined effect of any chemical group of dyes or of any hue was detected as a result of this work. Finally, it was found that the influence of a particular dye on the rate of disintegration of wool under the action of light has an important bearing on the redyeing of worn garments and also on the launderability of such garments.

Photochemistry of aromatic azo compounds in organic solvents. B. Edwin Blaisdell. *J. Soc. Dyers Colourists 65,* 618-28 (Dec. 1949).

Qualitative observations on the photochemistry of azobenzene and 4-amino-4′ nitroazobenzene solutions in *iso*propyl alcohol and *iso*octane in the presence of various amounts of oxygen are discussed. The fading reaction consists in the addition of hydrogen, extracted from the solvent, to the azo linkage to form a substituted hydrazine and later substituted anilines. In the presence of oxygen there is a photosensitized oxidation of the solvent. In *iso*propyl alcohol as solvent the fading of the dye is completely inhibited by one atmosphere of oxygen, but after exhaustion of the oxygen the dye fades very rapidly. In the presence of a large excess of oxygen the dye eventually fades slowly. The rate of oxygen consumption increases during the exposure and continues to increase after complete destruction of the dye. In this case the oxidation products contain aliphatic acids and carbon dioxide in addition to acetone.

Photo-oxidation and its relation to fading and photodegradation. Special case of the photodecolorization of a non-nitrogenous vat dye—Ixone. Chas. Defraisse & Maurice Lowry. *J. Soc. Dyers Colourists 65,* 786-88 (Dec. 1949).

Ixone, which is a non-nitrogenous vat dye, contains in its molecule an anthracene ring system capable under the influence of solar radiation of combining with oxygen to give a colorless photo-oxide. The sensitivity of this dye to sunlight is

explained by this mechanism and the hypothesis is extended to other dyes containing the same structure.

Photo-oxidation of a chlorophyll preparation. Wm. Lonie & Mobray Ritchie. *J. Soc. Dyers Colourists 65*, 714-18 (Dec. 1949).

The photo-oxidation in white light of a chlorophyll preparation on various solids was examined by the direct measurement of oxygen pressure decrease. Rates were found to be low on glass, zinc oxide, aluminum oxide, thallous and ferric phosphates, but were extremely rapid on thallous iodide and bromide. In the presence of water vapor and carbon dioxide no change in rate was observed on thallous bromide. As a result of these experiments it was found that the course of oxidation resembles that of some other organic molecule oxidations, being characterized by an induction period, by a constant-rate portion, and by a subsequent rate of oxidation slowly decreasing to zero.

Photosensitization and tendering by vat dyes. C. H. Bamford & M. J. S. Dewar. *J. Soc Dyers Colourists 65*, 674-81 (Dec. 1949).

The relative activities of a number of vat dyes have been compared for the following photosensitized reactions: a) tendering of viscose, b) autoxidation of tetralin, c) polymerization of styrene, and d) deactivation of the excited dyes of oxygen. The tendering activity shows no correlation with (c) or (d) but does show a moderate degree of correlation with (b). Therefore, it is concluded that the tendering of cellulose in the presence of water involves a preliminary oxidation of the hydroxyl ion by the excited dye, and not a transfer of energy to oxygen as postulated by others. Also discussed in detail is the mechanism of tendering in which hydrogen peroxide is an intermediate reaction product. The tendering of dry cellulose, nylon, silk, or cellulose acetate involves non-chain oxidations of the fabrics by excited dyes. A mechanism is also postulated to account for the non-formation of hydrogen peroxide in the absence of moisture.

Photosensitization of polymerization reactions. A. B. Whyte & H. W. Melville. *J. Soc. Dyers Colourists 65*, 703-08 (Dec. 1949).

Some experiments in the photosensitization of polymerization of vinyl acetate and of methacrylic acid in aqueous solutions are described, the primary object being to investigate photochemical radical production in organic liquids and in aqueous solutions. Detailed methods of measuring the

degree of polymerization are described. As a result of this work it was concluded that provided conditions can be chosen so that the polymerization process is not interfered with in any way, quantitative radical detection is possible in organic liquids or in aqueous solutions.

Properties of rope. David Himmelfarb. *Cord Age 52*, 5-6, 8-9 (Sept. 1949).

See TTD: *6*, 819.

Reaction of wool with chlorine solutions. I.—Diffusion across a liquid layer. P. Alexander, D. Gough & R. F. Hudson. *Trans. Faraday Soc. 45*, 1058-66 (Nov. 1949); **II.—Diffusion within the fiber.** *Ibid.*, 1109-18 (Dec. 1949).

I—It is shown that the rate-controlling step in the reaction of a solution with wool is either diffusion through a liquid film or diffusion in the fiber, the 2 processes being characterized by activation energies of 6 and 12 kcal./mole respectively. The conditions of film diffusion are determined and the effect of agitation and temperature on film thickness calculated and related with experiment. It is deduced that the temperature coefficient of the film diffusion-controlled reaction should be greater than that of diffusion of chlorine in water. II—The conditions under which the reaction is controlled by diffusion within the fiber are determined. It is shown that the rate is almost proportional to initial concentration (i.e., $t\frac{1}{2}$ constant) and it is concluded that diffusion proceeds from a changing surface concentration. A kinetic expression for these conditions is derived and compared with the diffusion equation of Wilson. The mechanism of fiber diffusion is discussed and the high energy of activation step is considered to be hole formation in the fiber-water gel.

Society of Chemical Industry: [lectures delivered before]. *Dyer 102*, 81-8 (July 29, 1949).

Summaries are given of the following lectures delivered before the annual meeting of the Society of the Chemical Industry, Manchester Univ., July 11-15: "The oxidation of cellulose with nitrogen tetroxide," by T. P. Newell; "Some aspects of polymer constitution and fiber properies," by R. Hill; "Detergents and detergency," by F. D. Snell; "The dyeing of rayon," by J. Boulton; "Synthetic fibers from natural proteins; reaction with proteins," by D. Traill; and "The changes produced in wool by processing," by S. Blackburn.

Some experimental observations on the photochemical degradation of dyed cotton. D. Ashton, D. Clibbens & M. E. Probert. *J. Soc.*

Dyers Colourists 65, 650-58 (Dec. 1949).

As a result of a series of experiments designed to ascertain the effect of certain dyes on the degradation of cotton it was found that the photochemical oxidation of cotton by air is sensitized by sulfur, basic, and vat dyes. A correlation was found to exist between the color of the vat or sulfur dye and its sensitizing action, but no evident correlation existed in the case of the basic dyes. It was also found that very small amounts of copper may exert a large effect on the photochemical action of all classes of dyes by inhibiting their sensitizing action. A strong positive correlation between the liberation of peroxide by a dye on irradiation and its accelerating effect on the photochemical oxidation was also found to exist. Accelerating sulfur dyes do not liberate detectable amounts of peroxide on irradiation.

Structure of textile fibers. XI. Fibers made from dispersed proteins. R. L. Wormell. *J. Textile Inst. 41,* P16-28 (Jan. 1950).

The three types of active side groups which are important from the standpoint of making fibers from dispersed proteins are discussed. These 3 types of side groups are: 1) carboxyl, 2) amino, and 3) amide. The chemistry of each of these groups is discussed in detail. Also described are the importance of the cystine groups and the influence of molecular size on the preparation and structure respectively of fibers made from proteins. Finally the fine structure of protein fibers as shown by x-rays is discussed in detail.

Thermal behavior of fabrics at flaming temperatures. S. Coppick, J. M. Church, & R. W. Little. *Ind. Eng. Chem. 42,* 415-18 (Mar. 1950).

The protective quality of a fabric may be defined, from a thermodynamic viewpoint, as a function of the quantity and intensity of the heat supplied and generated, the area over which it is effective, and the coefficient of heat transfer. Tests show that because their thermal conductivity is similar, cellulose fabrics which are adequately flameproofed and glow-retarded have thermal protection qualities equal to fabrics made from the most inert fibers.

TEXTILE EDUCATION AND RESEARCH J

Conference for advanced study of rayon and synthetic textiles. D. E. Douty. *Papers Am. Assn. of Textile Techn. 5,* 79-84 (Mar. 1950).

This is a report on the Conference for Advanced Study of Rayon and Synthetic Textiles, sponsored by the AATT, and held at the Textile Research Department, Am. Viscose Corp., Nov. 16-18, 1949. Brief summaries of the papers presented at the conference are given.

Current activities of the inter-society color council. E. I. Stearns. *Am. Dyestuff Reptr. 39,* 109-12, 120 (Feb. 20, 1950).

This is a review of the work of the Inter-Society Color Council, the aims and purposes of which are to stimulate and coordinate the work being done by the various societies, organizations and associations leading to the standardization, description, and specification of color and to promote the practical application of these results to the color problems arising in science, art, and industry.

Problems in gloss evaluation. Daniel Smith. *Interchem. Rev. 7,* 95-108 (1949).

This is an illustrated review of the psychological and physical factors involved in the evaluation, specification, and control of the gloss of industrial finishes. Instruments developed for determination of gloss are discussed. 61 references.

Progress in fibers expected from fundamental research. A. E. Buchanan. *Textile Age 14,* 88, 90-1 (Feb. 1950).

In a summary of a paper presented at a meeting of the Textile Research Institute, the place of fundamental research in future developments in the textile industry is discussed.

Special number. *Bull. de l'Institut Textile,* No. 16, Jan. 1950; *in French.*

This entire issue is devoted to accounts of visits to textile research and educational institutions, textile machinery manufacturers, and textile mills in Great Britain and the U. S.

Textile education and research. *Textile Mercury & Argus 121,* 869-70, 908 (Nov. 4, 1949); **Textile education and training.** *Ibid.* 973, 975-77, 979-81 (Nov. 18, 1949).

Part I is a general discussion and account of the Anglo-American conference on textile education held at Buxton (England); Part II presents brief summaries of the papers given at the conference.

Textile progress from fundamental research. A. E. Buchanan, Jr. *Papers Am. Assn. of Textile Techn. 5,* 74-8 (Mar. 1950).

The value of fundamental research is stressed and its role in providing the textile industry with

new fibers and fabrics is described. Fields that will require much fundamental research because of new developments are dyeing and blending. As the result of fundamental studies, a synthetic "wool", possessing all the warmth, liveliness and durability of wool, plus additional advantages, is a development that should occur, it is predicted, in 5 years.

Textile research achievements in 1949. Julius B. Goldberg. *Papers Am. Assn. of Textile Techn. 5,* 66-7 (Mar. 1950); *Textile Bull. 76,* 39-43 (Jan. 1950).

Research developments in textiles during the year 1949 are reviewed.

Trend of development in textiles. A. Johnson. *Textile Mfr. 75,* 555-56, 558 (Dec. 1949).

New developments in textiles that may be expected in the future are discussed under the following headings: materials, yarn manufacture, preparatory processes, and dyeing and finishing.

Ultrasonics gets green light for textile industries. Wm. A. Newell. *Textile World 100,* 91-2, 192, 195 (Jan. 1950).

Ultrasonics, or vibrations of sound waves at frequencies above audible sound, are now ready for practical textile applications. They may be of use in processes that take place in a liquid medium and that require the action of a catalyst, agitation, or heat. A recently developed ceramic overcomes one of the barriers that has kept ultrasonics in the laboratory. Laboratory and small scale units for producing ultrasonic power energies are now on the market.

Wool research institutions throughout the world. 2. Textile Department, Leeds University. *Wool Science Rev.,* No. 2, 15-30 (Feb. 1949).

Research in the textile department at Leeds University is carried out by 1) the teaching staff, 2) graduate students working toward the M.Sc. and Ph.D. degrees, and 3) a small group of independent research workers. The work of the textile department in its studies of the constitution of keratin, low temperature setting, formation of polymers in wool, theories of dyeing, and textile technology is described briefly.

Wool research institutions throughout the world. 3. Vezelinstituut T.N.O., Delft, Holland. *Wool Science Rev.,* No. 3, 10-15 (July 1949).

This is a brief discussion of the development, present organization, equipment and investigations, and publications of the Vezelinstituut T.N.O.

TESTED IS TRUSTED

Success In Using SYNTHETICS Depends Heavily On TESTING

Scott IP and J Testers shown above give you world-standard equipment from step-by-step control of your processing. From single fibre to finished fabric, for thread, single end or skein yarn, tensile and burst testing, *Scott Testers give you an accurate "picturized" story of the stretch and strength characteristics of these versatile materials.

*Registered Trademark

Request Catalog 49.

SCOTT TESTERS, INC.

94 BLACKSTONE ST. PROVIDENCE 5, R. I.

Standard of the World